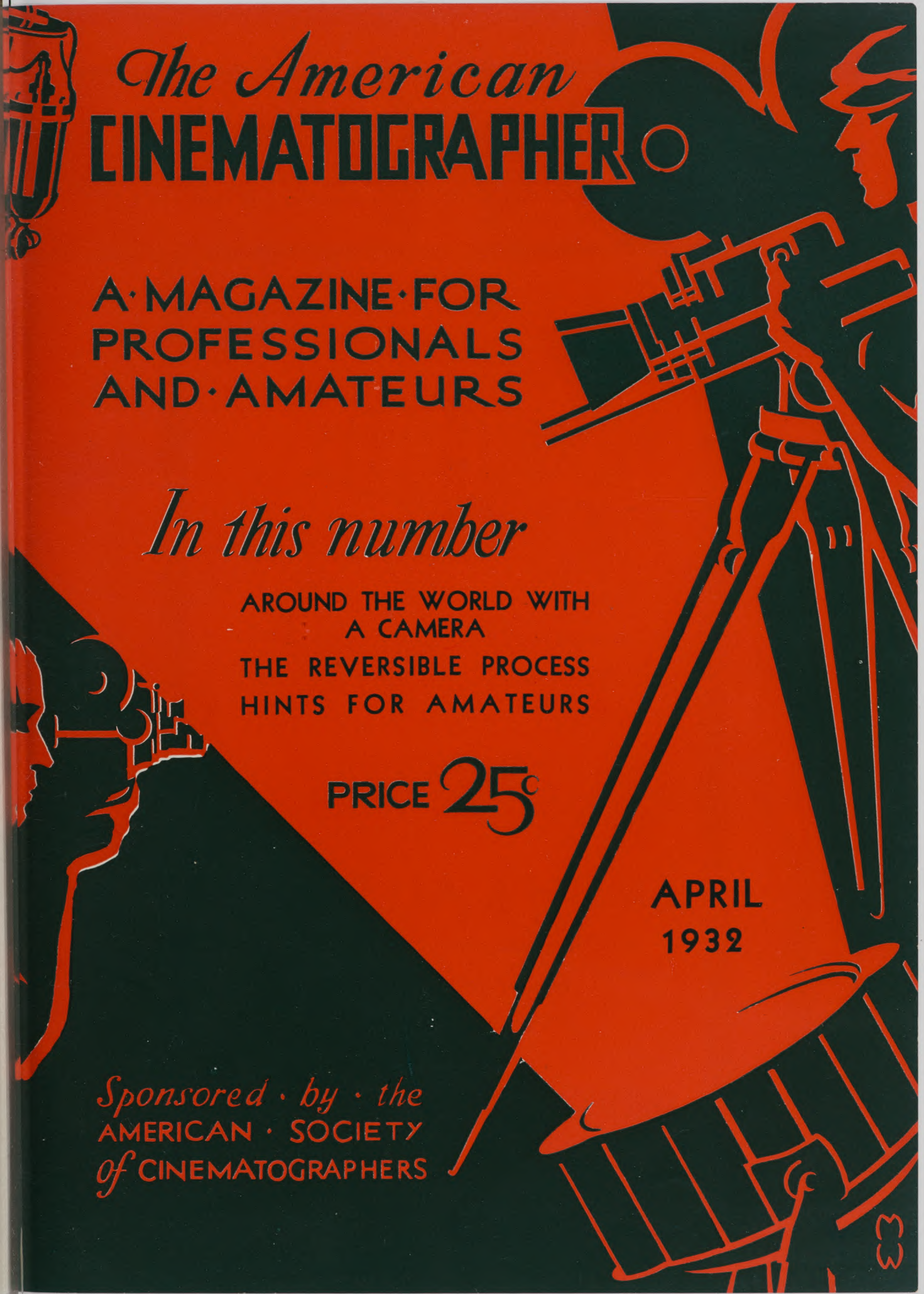

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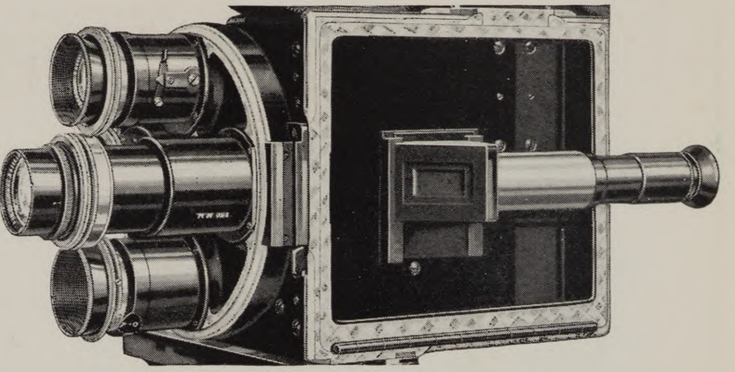
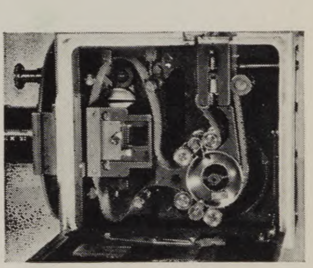


Exterior view of B&H Camera, equipped for aperture focusing, showing adjustable 5X and 10X magnifier



Right—Interior of camera showing focusing prism set in pilot pin intermittent mechanism

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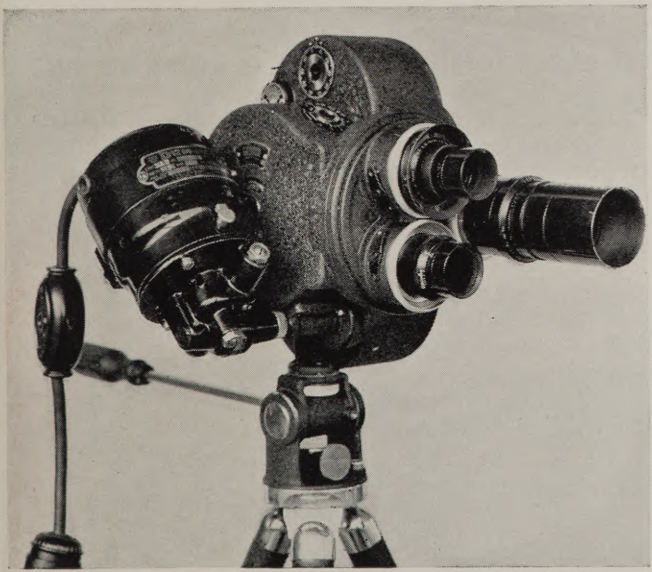

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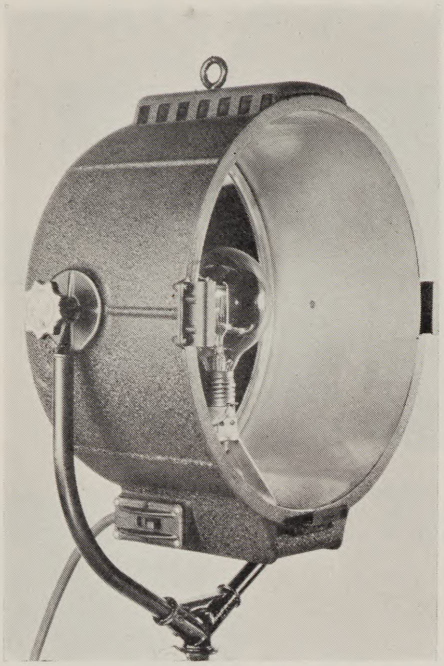

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John Dored, Riga, Latvia
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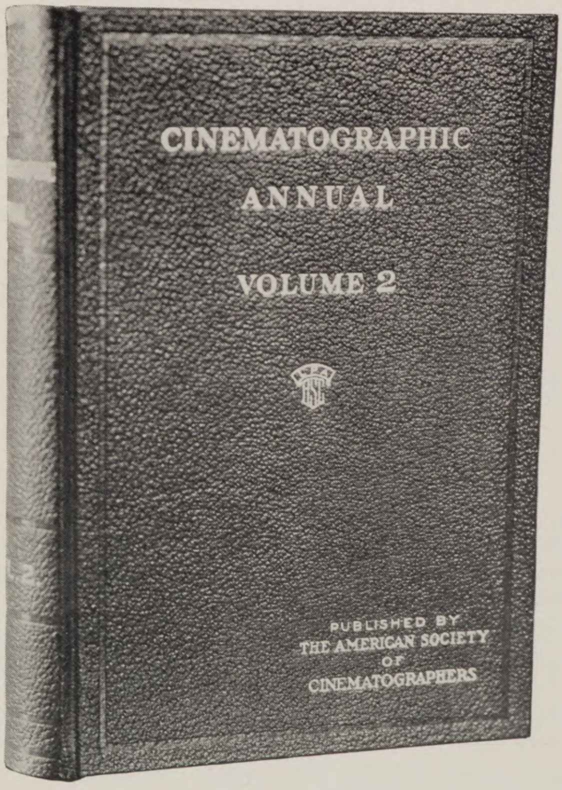

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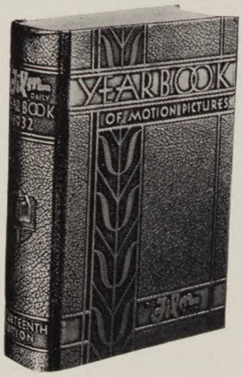

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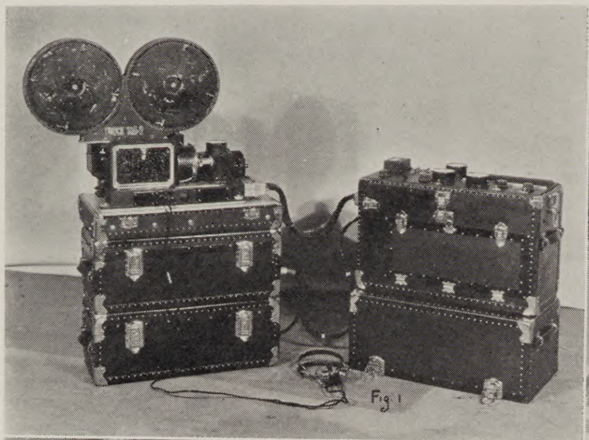

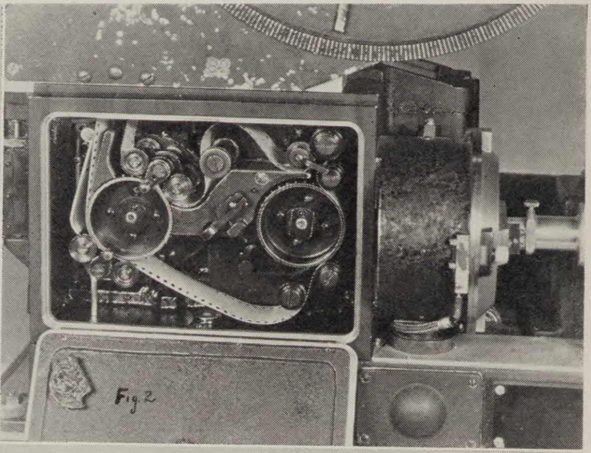

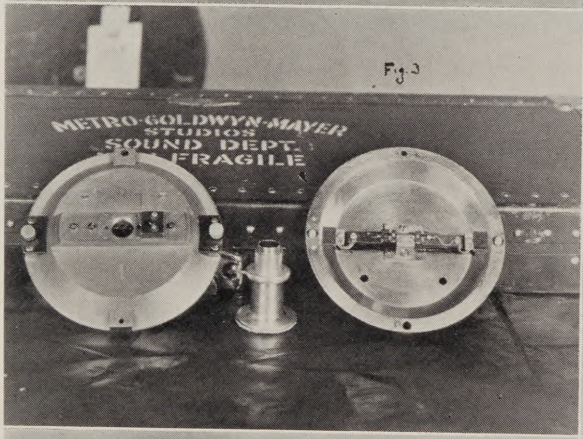

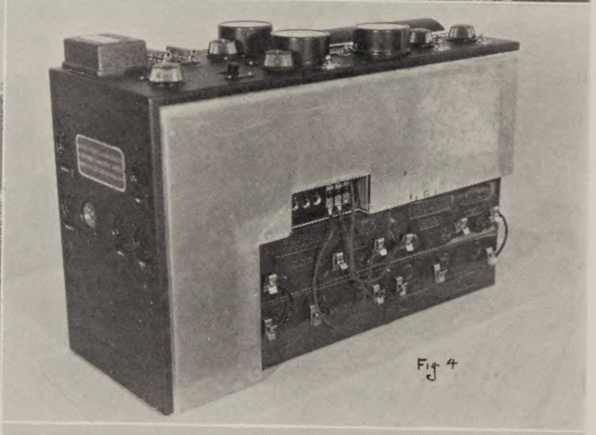

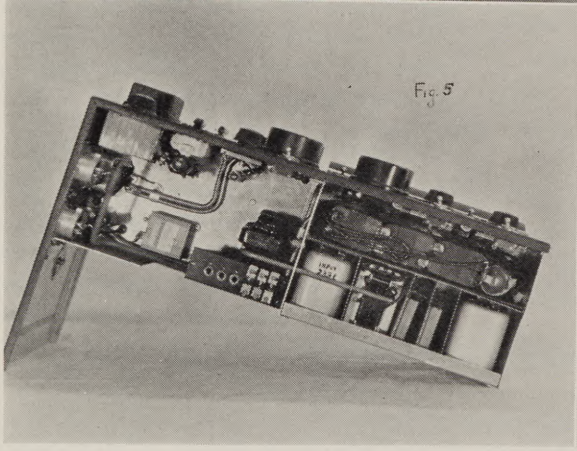

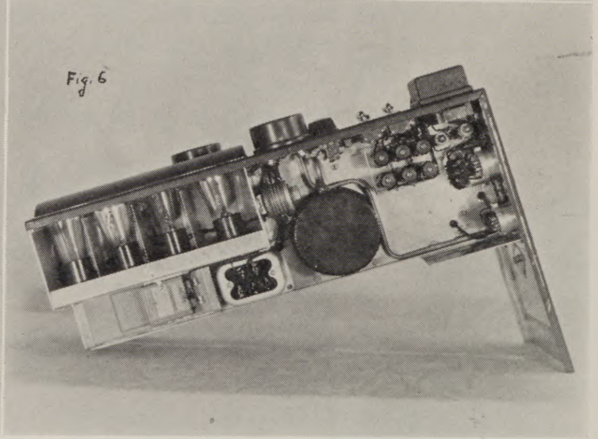

Fig. 1. Recorder arranged for operation. **Fig. 2.** Details of film compartment. **Fig. 3.** The light valve. **Fig. 4.** The combined mixer and amplifier removed from case. **Fig. 5 and 6.** Show interior construction of the unit.

The M-G-M Portable Recording Outfit

by **WESLEY C. MILLER**
Chief Engineer, Sound Department, Metro-Goldwyn-Mayer Studios

THE need for completely portable sound recording apparatus has been felt since the beginning of commercial sound recording. The first step in this direction was to mount standard studio apparatus in somewhat abbreviated form in a truck, which served both for transportation and as an operating room for the apparatus. The arrangement, at best, was cumbersome, and was definitely incapable of being used in many places where recording was desired. A modification of the truck form involved the mounting of the various units in semi-portable carrying cases, which were normally mounted in a truck for transportation, but which could be removed and set up at a location quite removed from the truck. Inasmuch, however, as these units used the same recording apparatus as that formerly mounted in the trucks themselves, the total weight and complication were very slightly reduced.

Increased production requirements and demands prompted an effort by the M-G-M Studio organization to design and construct a truly portable apparatus. The general requirements imposed upon this design were as follows

1. Quality of recording.

Production of results at least equivalent to a standard stationary channel.

2. Extreme portability.

This implies a minimum total weight and a maximum weight for each unit such that it may be handled by one man.

3. Ability to operate for a considerable period without return to a base.

This is accepted to be a matter of several hours continuous shooting without recharging batteries, but implying the possibility of remaining away from the base for several days, or longer, by employing a portable battery charging device.

4. Provision of driving power for at least two cameras.

5. Use of separate negatives for picture and sound.

6. Suitable speed control, and means of synchronizing sound and picture.

7. Rigid construction to permit of shipment and rough handling.

With these requirements in mind, a recording outfit has been developed which not only meets the requirements, but appears to be the most satisfactory production unit of its kind which has thus far been made available. The complete outfit consists of the following units:

1. Recording machine. (Weight 96 lbs.)

2. Mixer and amplifier. (Weight 90 lbs.)

Contains B batteries and spare vacuum tubes.

3. Main battery supply. (Weight 90 lbs. per box, total 180 lbs.)

Consists of two boxes, each containing 60 volts of 12 ampere-hour, airplane type storage batteries.

4. Microphone and cable unit. (Weight 73 lbs.)

Contains one microphone complete, and 250 ft. of cable, in various sections, which may be used interchangeably for motors or microphone.

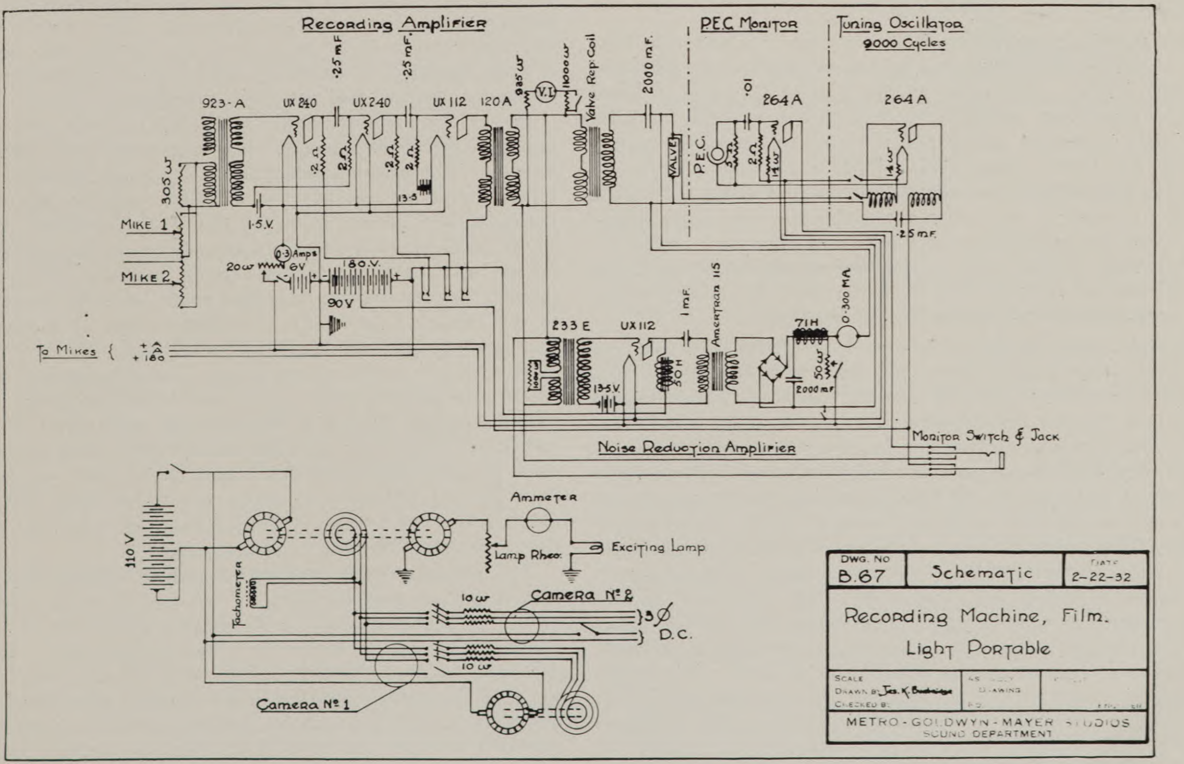

Fig. 7. Schematic drawing of the portable recorder.

5. Magazine case. (Weight, loaded, 58 lbs.)

Contains three 1000 ft. magazines.

All necessary spare parts, replacements and tools are mounted in special compartments in various parts of the equipment. These include extra valves, microphone condensers, oil, tubes, exciting lamps, etc.

The total weight of the combined units is 498 lbs., which represents the sum of the individual weights given in connection with each unit above, although the total weight of the actual operating units (Nos. 1, 2 and 3 above) is but 366 lbs.

The accompanying illustration, Fig. 1, shows the arrangement of the apparatus for operation. The plan dimensions of each box are identical, with the exception of the recorder box, which is slightly wider than the others; and they are arranged for stacking, which sets both recorder and amplifier off the ground and at a suitable height for operation by a man sitting on a chair or on one of the covers. The heavy units are placed at the bottom, thus lending stability to the arrangement.

The boxes are made along the general lines of trunk construction; that is, of fibre and ply-wood, with protective corner pieces, and trunk-type latches on the covers. Metal feet are provided to take the burden of normal sliding, and also to hold the units together when stacked for operation.

Recording Machine

Fig. 2 shows the details of the film compartment in the recording machine. The movement consists of two sprockets rotating at 180 R.P.M. (clockwise in the illustration) one for driving purposes, and the other for recording. The motion and control of the film between the driving sprocket and the recording sprocket, both on the entering side and the leaving side, has been worked out in such a manner that clear loops are maintained to completely isolate the recording sprocket from all fluctuations which occur in the driving sprocket. The mechanism for obtaining this condition may be seen by a reference to the figure. The method is a combination of the various elements used in certain types of recording machines now in existence, and has been proven by test to be at least equivalent to the best movements which the writer has thus far observed.

Both sprockets are driven from a worm and gear combination, which in turn is operated by the driving motor, operating at 2880 R.P.M. The drive to the driving sprocket is direct from the worm gear, whereas the drive to the recording sprocket is through a damped spring-driven fly-wheel, provided with a bearing on either side. This filter combination serves to minimize the effects of irregularities in the worm and gear, and also to control any influence which the film loops might have upon the operation of the recording sprocket. Arrangement is made on the door of the film compartment to insure that all control handles and levers on the film rollers are in their proper places before starting the machine.

The light valve, as shown in Fig. 3, is identical in principle with the standard single ribbon type used in the studio, although it differs in form to provide for the particular requirements which this recorder and portable use impose. The single ribbon is held in place at either end by two screws which serve as bridges, and also to maintain the ribbon spacing. The tension is taken at one end by the solid mounting block; and at the other, by an adjustable, spring-mounted lever, to permit of tuning. This ribbon forms one side of the exposure aperture, and a fixed straight edge provides the other. The plane of the ribbon is about .002 inch away from the plane of the straight edge, so that in case of overloads, the ribbon passes over the straight edge. No damping is provided at present, although this may be readily installed if desired. This model of valve overloads at 4.0 db above a 10 milliwatt zero level. The magnet assembly is cylindrical in form; the windings being in two sections, with a space between to provide for split-beam P.E.C. monitoring. When the valve is in position on the magnet, the entire valve assembly is completely dustproof. To facilitate handling, the screws which serve to hold the valve in place are also used as its connections to the circuit.

The optical assembly consists of a condensing lense, which mounts directly on the back of the valve plate, and an objective lens, which is mounted permanently on the machine. The optical axis is horizontal, and intercepts the recording sprocket exactly in line with the center of the latter. The light source is a standard 9 ampere ribbon filament lamp, mounted in a readily adjustable holder, to enable the lamp to be properly focussed.

Photoelectric cell monitoring is provided by means of a split mirror, mounted inside the magnet assembly, which intercepts a portion of the light beam from the valve, and reflects it at right angles into a photoelectric cell mounted in the base of the machine. The output from this cell is led into a single stage amplifier, which is mounted inside the base of the machine.

At one end of the machine is a small tuning oscillator, adjusted to a single frequency of 9000 cycles. The method of use of this oscillator in tuning is discussed below.

The machine uses standard Mitchell, 1000 ft. film magazines, with a slight modification made necessary by the fact that the magazine may be placed upon the machine in either position, to permit of making two sound tracks on a single film if desired. This involves adding a lip at one end of the mounting plate, and changing the position of the seat for the lock screw. The take-up for the magazine is driven directly from the driving sprocket shaft, which also drives a footage counter. The film compartment contains an anti-buckle device, which shuts off the power to the machine instantly, in case of a failure to operate on the part of the magazine or of the recorder.

Mixer and Amplifier

Fig. 4 shows the combined mixer and amplifier box removed from its box; and Figs. 5 and 6 show the interior construction of the unit. A schematic diagram of the connections is given in Fig. 7. The apparatus provides for the use of two microphone circuits, each having an individual mixer control potentiometer connected to a 3-stage recording amplifier, volume indicator and noise reduction apparatus. The control apparatus for motor supply and regulation is also in this case, comprising a field rheostat, a vibrating reed type tachometer, and the necessary starting and interlock switches.

All of the various circuits terminate in jacks on a panel at one end, for connections to other units and other parts of the circuit. The large rectangular jack, having fourteen connections, serves to connect the amplifier unit to the recording machine, and carries input to the valve, filament, and plate supply; and also carries the necessary leads for the driving motor. Of the other small, cylindrical jacks, two are used for microphones, two for cameras, one as a spare, and one for connection to the battery supply unit. A compartment at the bottom of the panel is used for spare vacuum tubes.

The mixer positions are simple potentiometers, either of which may be used alone; or, if one is short-circuited, the two potentiometers operate in tandem with each other, to give an additional control for a single microphone. The volume indicator is the General Radio copper oxide-lead rectifier type. It is located immediately beside the mixer dials, but appears electrically at the output of the recording amplifier, ahead of the valve repeating coil.

The amplifier is a 3-stage resistance coupled unit, having a total gain of approximately 77 db, and an undistorted power output of approximately 12 db above a zero level of 10 milliwatts, which is 8 db above the valve overload level. The characteristic of the amplifier is flat, within 1 db from 35 cycles to 10,000 cycles; and the voice quality obtained from the amplifier is excellent. Both direct and P.E.C. monitoring are provided in head phones plugged into the recorder base, with a key to transfer from direct to P.E.C. monitor.

(Continued on Page 22)

The Reversible Process

by **DR. W. RAHTS** and **DR. F. O. SCHULZ**

Translated by Dr. Herbert Meyer
Technical Division of Agfa Raw Film Corporation, Hollywood, California

(Continued from Last Month.)

IN CONTINUING this resume of the reversible process from the March issue of "The American Cinematographer," it will be necessary to refer to page 22 of last month's issue in the consideration of figure 2.

As was stated in the previous issue, it is comparatively simple to obtain excellent quality with reversible film when the correct exposure is used, and the contrast ratio of the subject being photographed is not beyond the latitude of the film. The difficulties encountered in reversible processes are particularly paramount in attempting to correct over and under-exposure.

There are, however, several methods by which to correct under and over-exposure. The first method consists of varying the developing time in the first developer, to which is added suitable solvents for the silver bromide.

As will be seen in figure 2 of the previous article, there will not be considerable change in the threshold speed by increasing the developing time. It will be noted that with each of the different time curves, the start of the straight line portion at the upper left is lying on the same ordinance.

With this example, it requires six minutes in the first developer to obtain clear high-lights. However, the highest densities are still rather too dark, reaching a density of 2.8.

By increasing the developing time, the maximum densities decrease simultaneously. The lower end of the curve shifts to the left, thus automatically limiting the exposure range or latitude. The curves in this instance slightly soften.

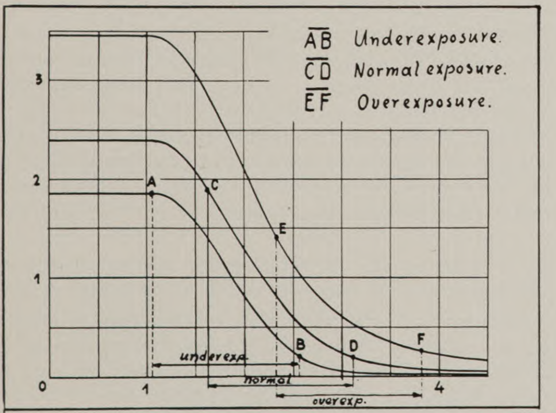

Figure 2a
Agfa Reversible Film
Correction of erroneous exposure by development

As it will be readily noted, there are some possibilities for correcting wrong exposure by this method, which, however, have certain limitations, depending upon the degree of sacrifice in fog and maximum density.

Referring to figure 2a, this method should allow for a correction in the range of 1 to 16.

The curves in figure 2a have been accomplished by reading sensitometric strips, which were exposed through a density wedge and subsequently being developed in the first developer with silver bromide solvents added for a time of 4, 8, and 12 minutes after which they were bleached and redeveloped to infinity. The object to be considered covered an exposure range of 1.5, which is marked in figure 2a three times on the horizontal axis as follows:

1) under-exposure A—B with exposure range from 1.1 to 2.6.

2) normal exposure C—D with exposure range from 1.7 to 3.2.

3) over-exposure E—F with exposure range from 2.3 to 3.8.

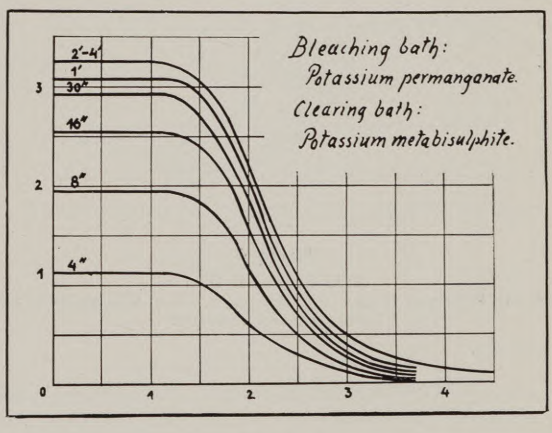

Figure 3
Agfa Reversible Film
Different exposures before second development

The ordinances belonging to each of these points marked on the log exposure axis, determine on the corresponding curves the density range of the reversed positive image.

The ordinances for the normal exposure C—D enclose a section on the 8 minute curve, which fulfills all requirements for good projection quality, i.e. clear high-lights, proper shadows and suitable contrast in all densities.

It will be noted on the 8 minute curve, which is considered the normal curve for normal exposure, that the part E—F being over-exposed will be inadequate in the positive print as the high-lights will lack definition being too transparent and as the maximum density in this portion is below 1.0 with the result that the shadows will be too light and gray.

On the other hand, the under-exposed part A—B would show on the 8 minute curve densities too high throughout as the high-lights will be covered and the shadows entirely too opaque.

Both under- and over-exposure, however, can be corrected by varying development in the first developer containing silver bromide solvents to the extent that it will be possible to still obtain satisfactory projection quality with suitable density gradation.

The over-exposed part E—F for example, shows a density range on the 4 minute curve, which, while not quite equivalent to that of the normal part on the 8 minute curve, still represents good picture quality.

The high-lights are not quite clear, but the shadows will be sufficient in density. Over-exposure therefore may be satisfactory on the 4 minute curve although the picture quality will appear rather soft.

In a similar way, the under-exposed part A—B may be corrected by increasing the time of development, which causes a decrease of the general positive density, due to the prolonged application of the silver bromide solvents in the first developer.

In considering the 12 minute curve, it will be noted that the under-exposed part A—B has a maximum density of 1.8 with clear high-lights. The lighter shades will also be satisfactory.

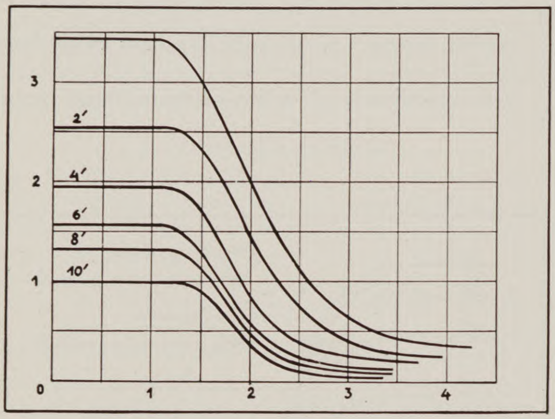

Figure 4

Agfa Reversible Film treated for different length of time in a 10% thiosulphate solution before second exposure

To sum up the foregoing statements, the variations obtained from changing developing time of the first developer in the reversible process allow for certain definite corrections of errors in exposure.

Furthermore, it will be seen from figure 2a that considering a range of contrast of 1.5 in the object, the exposures in accordance with the application of the corrective developing method have a value of 1.1 to 2.6 for under-exposure, and 2.3 to 3.8 for over-exposure on the log exposure axis. The difference in these values is equal to 1.2, so that the latitude of the exposure in this case is in the relation of 16 to 1.

A second method for correcting under- and over-exposure consists in regulating the second exposure, that is to say, after the first development the unexposed silver-halide is exposed to a light source, the exposure value of which is controlled in accordance with the required density which is pre-determined after the first development is completed.

Considering an under-exposure and normal development, it is evident that a very large part of the silver-halide will remain undeveloped as where there is no exposure, the sensitive emulsion will be unaffected. It also will remain intact as the negative image is bleached and dissolved away in the bleaching bath, this, of course, is due to the characteristic of the bleach, which only affects the silver which has been reduced to metallic state during development. By controlling the second exposure of the unaffected sensitive emulsion, only that portion of the silver-halide which has been exposed by the second exposure, will be developed in the final development and that portion of the remaining silver-halide, which has not been affected by the second exposure and development will be carried away in the subsequent fixing bath. Thus the maximum density, which in the event of being too high, may be decreased or increased as the case may require.

To obtain the greatest latitude by this method, the time of development in the first developer should be as short as possible in order to avoid reducing any excess of the silver-halide which after reduction, would naturally be dissolved away by the bleaching bath.

Figure 3 represents reversed curves of Agfa reversible film, where the time of the first development has been reduced to five minutes, and the second exposure has been varied from 4 seconds up to 4 minutes. However, the limitations involved in the application of this method are similar to those mentioned in the description of the previous method, thus limiting the correction to the possible coherent differences in exposure in the relation of 1 to 16.

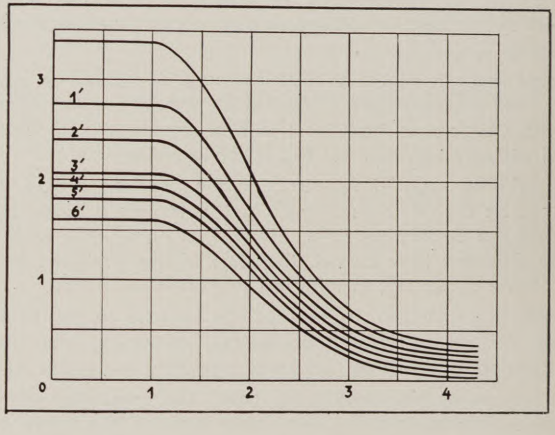

Figure 5

Agfa Reversible Film treated for different length of time in a Potassium Permanganate reducer after completion of the reversal process

A further method of correcting erroneous exposure is based on the reaction of a sodium thiosulphate solution (hypo) in dissolving the silver halide. This solution is applied between the bleaching and the secondary exposure (figure 4) where also the first development was maintained as short as possible. The greater the under-exposed portion, the lesser silver halide will be dissolved in the bleaching bath and thus correspondingly the more silver halide may be dissolved in the hypo solution later.

It will be noted also in figure 4 this method does not give as clear high-lights as the two methods mentioned previously.

A fourth method deals with the process in which after completion of the entire reversal the positive metallic silver image is reduced to the desired density with a suitable reducing agent, such as a potassium permanganate reducer.

It is evident from figure 5 that this method is quite inferior in comparison to the previously described methods. Other methods mentioned in photographic literature have been of little consequence up to the present time, even though they may show exceptional quality for a specific use.

In conclusion, the reversal process may be considered very satisfactory regarding results from normal exposure and normal objects. However, it is necessary to say that the working latitude of the reversal processes is quite limited considering the adaptability in different exposure ranges in the object being photographed as is extremely brilliant highlights and deep shadows as well as the possibilities of correcting exposure errors.

Glow-lamp Noiseless Recording

by **E. H. HANSEN**

UNDER normal conditions unmodulated sound track has a noise ratio, depending mainly on the amount of transient opacities interspread on the track. The levels of these transients vary as the ratio of the density of the unmodulated track to the transients, as represented on the print by dirt, scratches, oil, wax, etc. It being beyond the ability of any electrical circuit to discriminate between desired signal and acoustic back-ground noise, it is apparent that no effective results can be obtained in the elimination of acoustical noises. This paper describes the general principles of surface noise reduction as applied to recording glow-lamps. The circuits and film data represented are classical rather than those in use or applied by any producing company using this type of recording.

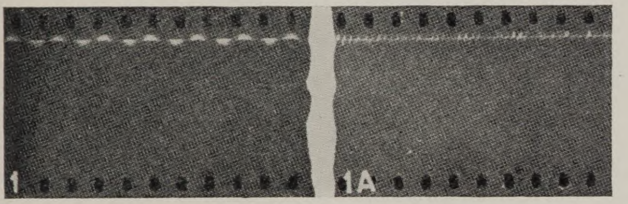

Fig. 1.

The first requirement in the making of a film record is that the fidelity of the density indicated on the print does not noticeably deviate in relationship from the applied sound pressure on the microphone diaphragm.

In considering the design of noise reduction circuits, whether they be intended for application with variable density or variable area, the work to be accomplished is the same in both instances, i.e. that for such periods of no modulation extreme opacity will be interposed between the light beam and the photocell of the projector.

It might be well at this point to consider what constitutes an ideal sound-track with regard to the elimination of surface noise as represented on the film. Obviously, a sound-track, wherein the speech signal is totally transparent and is surrounded by complete opaqueness, will constitute an ideal track. Such a track is shown in Fig. 1, and is a record made of a 50-cycle wave. It will be noticed that this negative track is opaque in portions of the track occupied by the signal and is completely transparent in the unused area. It will be noticed that the signal does not modulate a carrier exposure such as used in variable area records. It will also be observed that the positive half of the cycle lies above an imaginary center line and the negative half lies below this point. A print from this negative track will reverse the conditions and give us a signal that is transparent with a surrounding area completely opaque. Such a track is inherently noiseless and is made without the use of secondary exposure control devices.

Methods of Noise Reduction

Although the example is of the variable area type, such a principle is equally applicable to variable density. Such a negative variable density track would have exposure only during the signal period, reverting to clear transmission at all other times. The above ideal is varied in general practice by an attempt to provide the maximum opacity around the speech envelope in the print, rather than an attempt to fill in between every cycle or component thereof. In the variable area method two devices have been employed, one wherein the center line is varied, and the other where the center line remains in its usual position in the sound track, and then a secondary exposure surrounds the speech envelope.

In the variable density method the unmodulated exposure is varied according to the strength of the speech signal, and ranges from the normal density of the unmodulated track when fully modulated to the maximum density for the weakest speech signal. The above conditions apply naturally to the print.

Although it is possible to make variable area records with a glow-tube by actually photographing the expansion and contraction of the glow itself, the usual type of recording with the glow tube is of a variable density character.

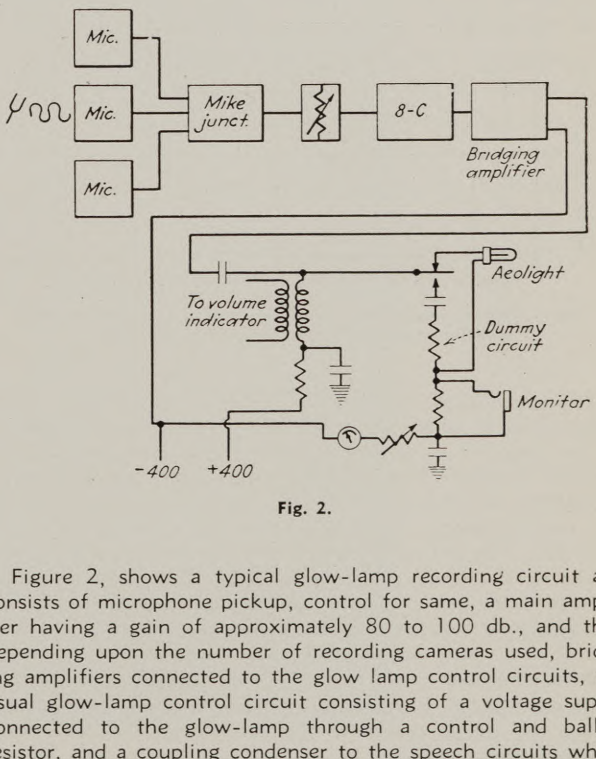

Fig. 2.

Figure 2, shows a typical glow-lamp recording circuit and consists of microphone pickup, control for same, a main amplifier having a gain of approximately 80 to 100 db., and then depending upon the number of recording cameras used, bridging amplifiers connected to the glow lamp control circuits, the usual glow-lamp control circuit consisting of a voltage supply connected to the glow-lamp through a control and ballast resistor, and a coupling condenser to the speech circuits which modulate this direct current flowing through the glow lamp. Additional means are provided for monitoring and also a dummy circuit so that the volume indicator will read correctly during such periods as it is desired to conserve the glow-lamp.

Operating Characteristics of the Lamp

In operation the value of a d.c. current flowing through the glow-lamp is determined by the light efficiency of the glow lamp with respect to the film emulsion characteristics. This value is chosen so that the unmodulated transmission will fall midway on that portion of the film characteristic to be used.

Either "toe" or "straight line" characteristics may be used in processing film for glow-lamp recording. Both methods of processing are possible and have proportional linear characteristics, otherwise they would be unusable, due to the loss of fidelity.

In general, the quality and quantity of light emitted by a glow discharge tube depends upon the electrode spacing, the type of gas, the pressure of gas, and the applied potential. From life and operating requirements it is usual to excite the glow lamp below maximum output. While this amount of light, when using positive emulsion, falls below that required for straight line **H** and **D** recording, it is more than ample for toe processing. When straight line **H** and **D** characteristics are desirable, it is usual to use a film having greater speed. In the last few months, so-called composite stocks have been developed by the film companies wherein the speed lies between that of the positive and negative emulsions, and is ample for straight line recording with glow discharge tubes. Negative stocks, such as orthochromatic, panchromatic and super-panchromatic, are capable of giving perfect straight line records with low light intensities. With the super-speed films, such as super-panchromatic, it is possible to work with very limited amounts of light and to fully modulate over the straight line **H** and **D** portion of the film.

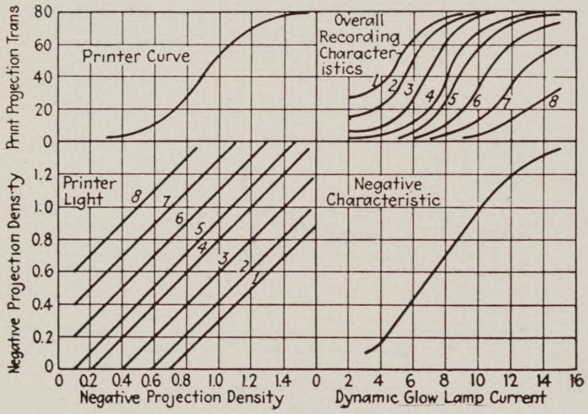

Fig. 3—Characteristic curves for exposures and processing with positive stock using glow-lamps for recording

The question of cost, however, must be considered. In the major studios, where from 50 to 75 productions a year are to be made, it is roughly estimated that approximately one hundred thousand feet of sound negative will be required per production for recording. In the case of the 50 production per year company, five million feet of sound negative are required. The price differential between positive and negative stocks is in the ratio of four to one. There is also an advantage in the use of positive stocks, due to their lower speed having greater stability and ease of handling, and this, in addition to the yearly saving, makes it desirable to employ that type of emulsion.

In the making of studio productions, it is common practice to use the double system of photography and recording, that is, a separate sound and separate picture negative. In the case of a single system, such as employed in newsreels, wherein sound is simultaneously recorded with the picture, the question of emulsion is necessarily determined by the photographic requirements. This usually calls for the panchromatic and super-panchromatic types. The requirements of photographic processing determine that of sound, and is necessarily straight line.

Referring again to the common practice in studio production work, positive stock is utilized generally, necessitating the toe method of processing when using glow-lamps for recording. The characteristic curves of such exposures and processing are shown in Fig. 3. The lower right-hand quadrant shows the negative characteristics of dynamic glow-lamp current plotted against negative projection density. The lower left-hand quadrant represents printer points, and the upper left-hand quadrant shows the characteristic of the printer curve having the negative projection density plotted against the print transmission. The upper right-hand quadrant shows the overall recording characteristics, and this should be chosen so that the original requirement of proportionality is carried out. In normal toe practice a print having an unmodulated transmission of between 40 and 45 per cent is specified.

Operating Limits For Film Exposure

The design and operation of biasing circuits, in connection with glow-lamp recording, depends upon the film characteristics to be utilized. It is obvious that the increase of opacity in the negative must not be carried beyond a point where there is film curvature. An examination of the negative characteristic in Fig. 3 shows that the straight line region extends from approximately 65 per cent transmission to 15 per cent transmission. In practice then we would place the unmodulated exposure half way between these peak limits, or approximately 40 per cent. At this point we can swing the film transmission with our signal 50 per cent without incurring noticeable deterioration of fidelity. This representing our highest modulating level, it is now necessary to pick a point further down the scale where a minimum signal will not overswing into the curved region of the emulsion. Allowing 10 per cent for this minimum swing, we pick a point wherein the unmodulated transmission for this value of signal will be 20 per cent. This minimum operating point, allowing a swing of 5 per cent plus or minus, is well within the safety zone and permits sounds of increasing intensity and flat wave front to be recorded without distortion. This is necessary due to a characteristic of the biasing circuit, which will be pointed out later, wherein a requirement of time for operation is essential.

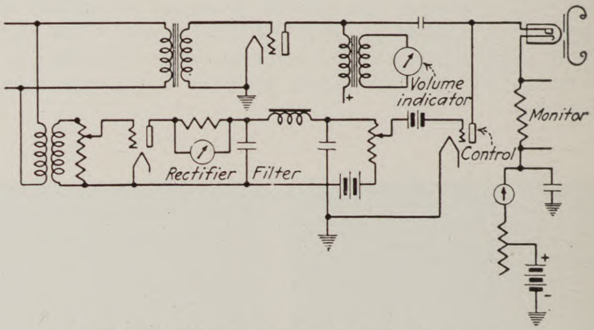

Fig. 4—Modification of circuit in Fig. 2 to meet special requirements of the biasing circuit

It is now necessary that we change our fundamental circuit, as shown in Fig. 2, to one similar to Fig. 4, the requirement of our biasing circuit being that for a minimum signal transmission of approximately 20 per cent unmodulated value shall be increased to a transmission of 40 per cent for our fully modulated signal. It is, therefore, necessary to make the control of the d.c. current flowing through the glow-lamp automatic and vary with the strength of the impressed speech signal. In Fig. 4, the d.c. path through the glow-lamp is controlled by the plate filament resistance of the control tube which is in series to ground. This control tube in turn has its grid potential varied by the output of a rectifier tube, and this rectifier tube in turn is energized by diverting a part of the speech current used to modulate the glow lamp.

It is possible upon the proper calibration of such a circuit, to vary the impedance in the glow lamp circuit in such a way as to change the d.c. component in accordance with the speech level impressed upon this circuit. It is necessary that means be provided so that the control tube will not modulate the d.c. component in accordance with low frequency speech currents. This is provided for in the filter timing circuit between

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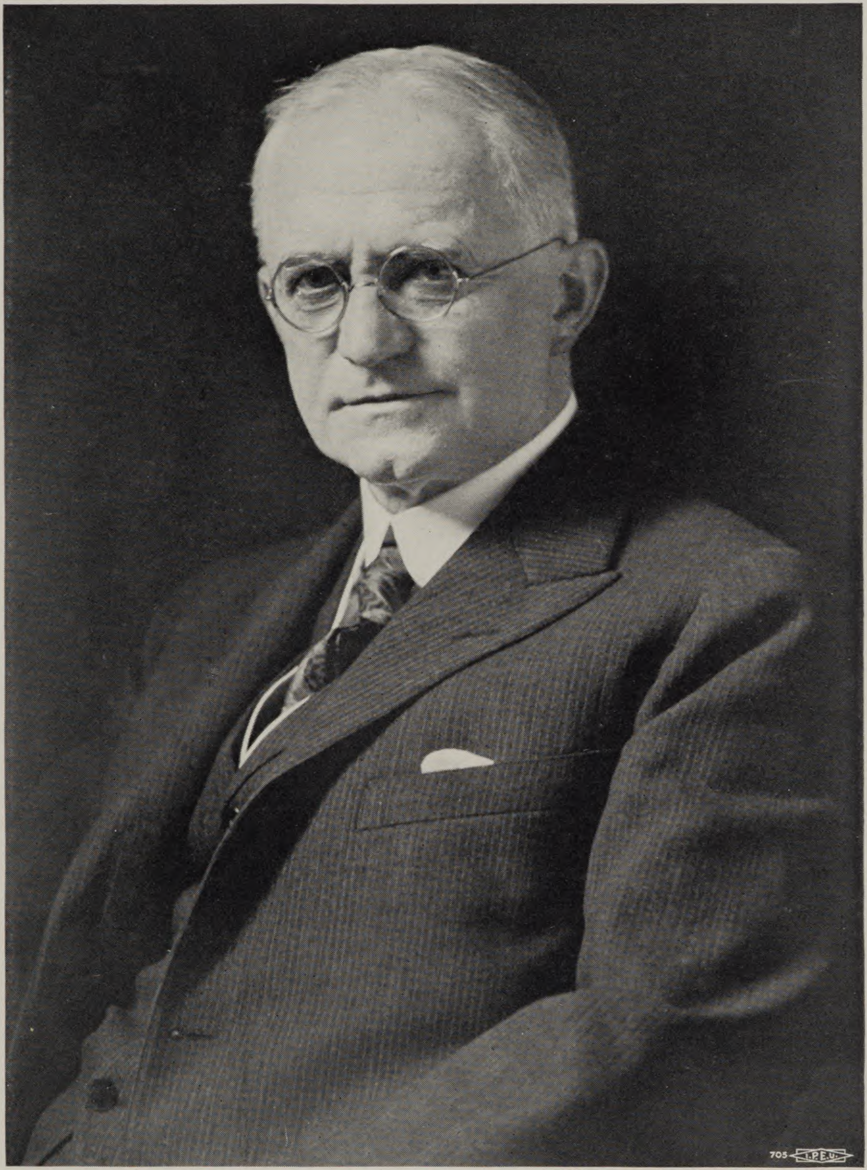
A Great Man Passes On



GEORGE EASTMAN is dead. And with his passing the world lost one of its greatest men. There will always be great men, but George Eastman can never be replaced. A genius in his line, he did more for the photographic art than any other single man, but he never boasted of what he had accomplished. He was not that kind. The motion picture industry could never repay him for the advancement he made possible in that field. But, it is not necessary to speak further of his work; the world knows of it.

He was a kindly man who was always thinking of some way to make better and happier the lot of his fellow men. He gave millions to schools, colleges, for the support of scientific institutions that would improve the condition of mankind. What more could a man do? He was one of the most beloved Honorary Members of the American Society of Cinematographers, and his death takes from this society a man who was ever an inspiration to all its members, each of whom sincerely hopes that he will find in the great beyond that rest and happiness which he deserves.

A group of interesting pictures Mr. Gilks made with his Leica. Upper two are sections of a bronze door in Florence. Center left, a scene at Cannes. Center right, Mr. Gilks and his wife and a friend snapped in the Montmartre district in Paris. Lower left is an interior in the Castle Sans Souci. Lower center is a shot through a window of the famous Casino at Cannes. Lower right is another shot in the Castle Sans Souci at Potsdam.

Around the Globe with a Camera

by **ALFRED L. GILKS, A.S.C.**

Chief Cinematographer, Vanderbilt Oceanographic Expedition

- Editor's Note: Mr. Gilks left Hollywood last June on a globe-circling expedition with Commodore W. K. Vanderbilt. The expedition left Northport, L. I., on board the Vanderbilt yacht, Alva. Special camera and scientific equipment were taken, and a special housing for underwater use of the Eyemo camera was devised for the trip. In a previous article Mr. Gilks wrote of the first part of the trip, and in this article picks it up at Monte Carlo.

ON DECEMBER 19th, we arrived in Monte Carlo, having circled the globe except for running across the Atlantic. On our arrival in the south of France we had travelled 26,000 miles and stopped at more than sixty different places. We were enroute twenty-four weeks, so averaged more than 1,000 miles a week including stops.

I should like to pay a tribute to Commodore Vanderbilt's ability as a seaman. Captain of his own vessel, he took complete responsibility of navigating and handling the "Alva" throughout the voyage. Often we were far from the well charted steamer lanes visiting out of the way islands, many of them poorly charted and surrounded by dangerous reefs. We encountered many unrecorded currents which set us far off our course and might easily have caused a mishap had not the strictest attention been paid to the navigational work. During thick stormy weather he never left the bridge more than a few moments night or day. Commodore Vanderbilt, an expert seaman and skillful navigator, may well be proud of his accomplishment of taking the "Alva" around the world without once jeopardizing her safety. During the cruise a wealth of material was gathered for his museum.

I exposed 30,000 feet of black and white and 10,000 feet of color negative, quite a complete photographic record of the interesting places visited. Scenes ranging from the pleasant south sea islands and eastern Pacific, seldom visited smaller islands of the East Indies; beautiful Bali; busy Java; Banka Islands, in the district Joseph Conrad often wrote of; Singapore, the crossroads; Penang, gem of the Malay States; Ceylon, reputed to be the most beautiful Island in the world; Aden, in the treeless Arabian desert; Cairo, city of cities; Pyramids; the Sphinx; Nile; Greece; Athens; stately ancient temples of Jupiter; Zeus; the Acropolis; the Corinth Canal; Itea; the ruins of Delphi, including Oracle of Apollo; Patras; Naples and Monte Carlo.

Mrs. Gilks joined me shortly after our arrival. We spent several days visiting along the Riviera before starting a little tour through Europe. While in Nice I called at the studio where Rex Ingram was just finishing a picture, had a pleasant chat with Mr. Ingram and his cinematographer Mr. Burel.

On a bright sunny morning we left Nice for Genoa, arriving there just at sundown, a beautiful ride I shall never forget, along the French and Italian Riviera, through quaint old villages along the coast until we reached the busy city of Genoa. All the way the road is an ever changing panorama, steep colorful hills and mountains to one side and picturesque coastline and deep blue of the Mediterranean to the other.

From Genoa we journeyed to Florence by train. The weather turned cold and stormy making exterior sight-seeing unpleasant but we didn't mind. The time we had was not nearly enough to enjoy to the fullest the works of art in the great "Uffizi Gallery," sculpture by Michelangelo in the "Medici Chapel" and "Pitti Palace," which houses the finest collection of paintings in Italy.

Next visited beautiful Venice, rich in history and entirely different from any other city. All Venetians should live to a ripe old age, they don't have automobiles. I can assure you a gondola is a much more pleasant conveyance than a taxicab.

Innsbruck, in the Austrian Tyrol, was our next stop. We rode to the top of a nearby Alpine peak by suspended cable car. From the porch of an inn we could watch the people who were enjoying winter sports and were fortunate to see some expert skiers in action.

From Austria we crossed into Germany stopping first in Munich. While there we spent practically all of our time in the Deutsches Museum which is devoted to the history of liberal arts, science and mechanics. A tremendously big place and intensely interesting. I hope to visit Munich again and have several weeks to spend there instead of a few days.

Our next stop was Nuremberg; the old city, built between the eleventh and fourteenth centuries, is in the heart of the present modern city. It is still surrounded by two massive

(Continued on Page 46)

Two remarkable snap-shots made by Mr. Gilks on his trip. The one on the left was made at night in front of the famous Moulin Rouge. The one at right is a snap-shot of a scene in Mistinguett's theatre from Mr. Gilk's seat during a performance. Both made with a Leica and the new fast film.

HAL HALL

says

Less Shutdowns?

IF ONE can take the reports from the various studios as being really serious and truthful, the picture industry during the coming summer should be less heart-breaking for the technicians than have been the past months. For, these reports indicate that there will be fewer shutdowns in the immediate future.

This is good news, if true. But, looking over the records of the past, one takes the reports and announcements from the studios with a grain of salt. Most of the studios in times past announced, with much seriousness, that there would be no cut in salaries in the various studios. When the announcements appeared in the public press and the announcers had taken the bows that followed, pay checks were immediately slashed—are still being slashed. It is stuff like that which makes for less efficiency in the picture making world. Why does a studio official announce anything unless he is certain he will be able to carry through his promise? Much better to merely say that it is "hoped" that such and such will be the case. This business of "running off at the mouth" by studio and other picture officials is perhaps one of the reasons that the picture industry is in the tough spot it is in today.

◆

Sex Pictures

THE recent warning by the British Censorship Board that there will be more drastic censorship of pictures in the British Isles unless the sex element is toned down should give American producers something to think seriously about.

While this writer's opinion may not be worth a plugged nickel, I am wondering just how far some of the producers will eventually try to go in the matter of Sex. Some pictures would indicate that some producers' minds must be in the gutter; and this is not good for the picture business. Pictures have the opportunity to be a tremendous educational force. Why use this force to pervert the public mind! If the pictures that toss sex matters about loosely turned out to be box-ofice smashes one might think that they were made because of the financial return. But the real money-making pictures invariably are the clean ones. So what is the answer? It is such rot that leads to more and more censorship.

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Film Daily Year Book

YEAR by year Mr. Jack Alicoate's "Film Daily Year Book" gets bigger and better. This year's copy has just reached this writer's desk, and we want to tell you, Mr. Alicoate, that you and your able staff should be congratulated. As a volume of statistical facts and figures relating to the industry from production to exhibition, it stands alone. Anyone needing information of this character should not be without it.

◆

Thanks

LAST month we asked our readers for criticisms and suggestions as to what articles to secure for future issues of the Cinematographer. The results have been gratifying, although rather surprising. Most of our readers seem to think we are giving them just what they want. Only a few have any complaints—and they are mild ones. We have also received some excellent suggestions. Let them keep coming.

The Amateur Contest

AMATEUR movie makers should note the rapid increase in the value of the prizes offered in our AMATEUR MOVIE MAKING CONTEST. It started as a contest offering $1000.00 in cash prizes. To date equipment prizes have been announced totalling $707.00—making the total prizes valued at $1707.00—which is quite a mark to shoot at. AND—next month more equipment, and several additional cash prizes will be announced which will bring the value of prizes to $2000.00. Now that the spring and summer months are just ahead, many an amateur would do well to get busy on a picture. The contest closes on October 31, 1932. That seems quite a long time away, but time flies rapidly. Better send in your intention of entering a picture, if you are a subscriber. Send your subscription, if you are not one. And remember—this is a contest SOLELY for AMATEURS, so you will not be faced with professional competition.

◆

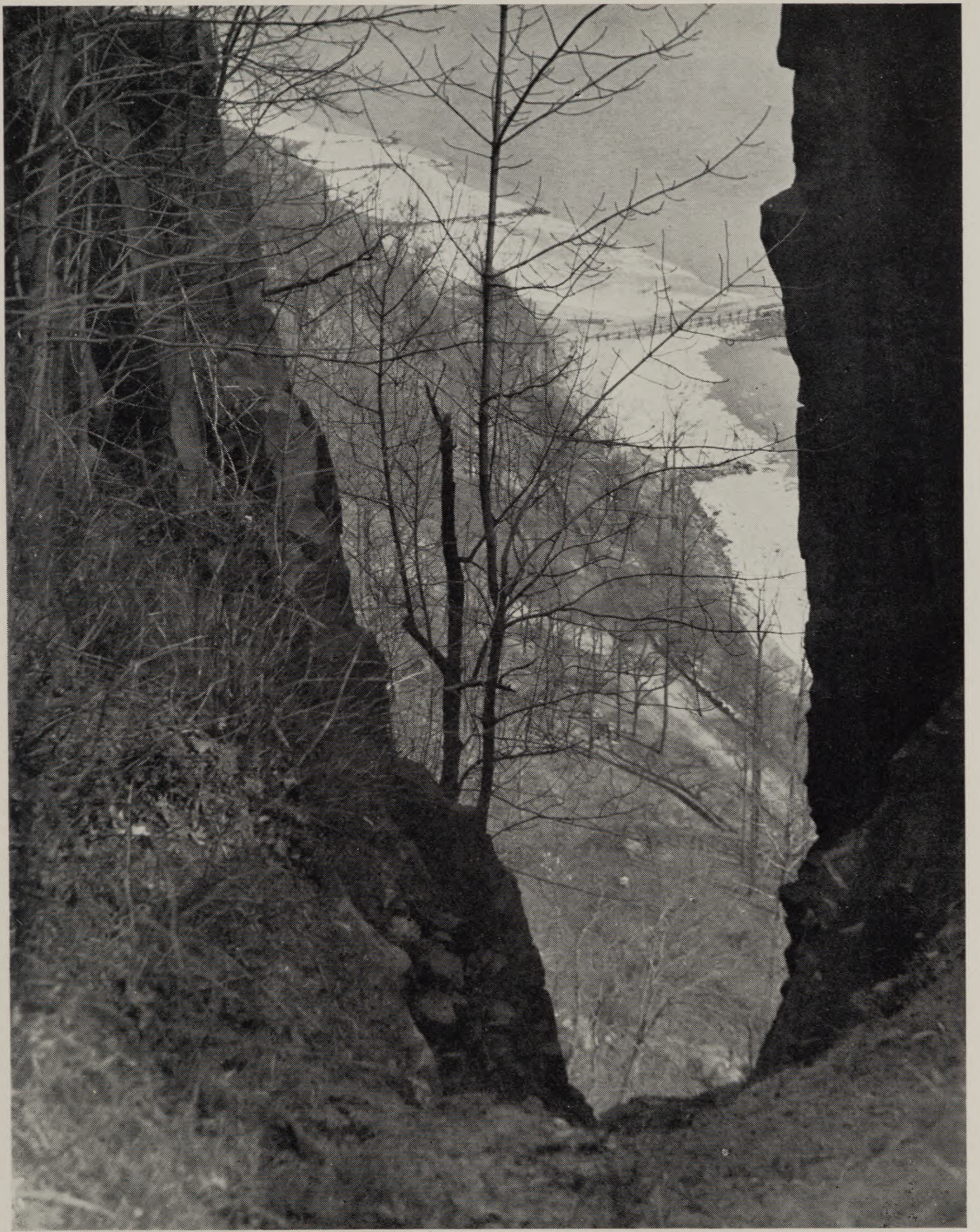
Boeger Leaves

HY BOEGER, for years general manager of the Mitchell Camera Corporation, and a close friend of practically every cameraman in Hollywood, has left the Mitchell organization. He left on the first of March. Hy is now located directly across the street from the Mitchell plant in his own building. He has many business activities and projects of his own, and we wish him as much success in the future as he had in the past.

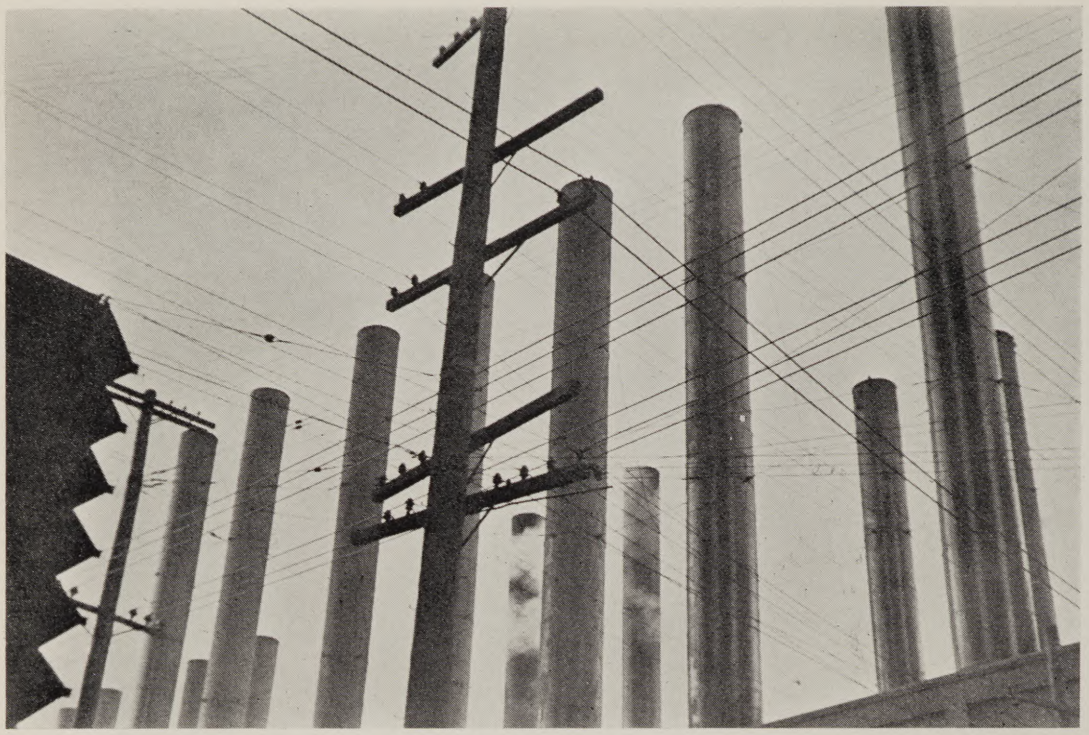
◆

This and That

IF ALL the reports coming from the motion picture studios are true things should soon be rosier in Hollywood . . . . let's hope so . . . . Things in this town don't look so hot right now . . . . Hollywood Boulevard, long touted as shopping center of class, now has sixty-four vacant stores in a few blocks . . . . This should be food for thought for those picture aspirants who have their faces turned this way . . . . Roy J. Pomeroy is reported forming new producing company . . . . Good luck, Roy . . . . Report also has it that Pathe studio, closed for some time, will be opened soon as a rental spot for the independents . . . . Charles Stumar, veteran cameraman, shooting at Universal . . . . also Dan Clark who says it's just like old times being with Tom Mix again . . . . Hal Mohr, genial past president of the A.S.C., is said to be developing into a flyer of rare ability . . . . If he flies as well as he makes pictures he should be a classy air bird . . . . Ray June is going to have a tough job at Paramount . . . . going to photograph the four Marx brothers in "Horse Feathers" . . . . won't be able to work for laughing . . . . According to announcement, a department of Cinematography has been added at the University of Southern California . . . . to be headed by Mr. Morkovin . . . . See where our old friend Lambert Hillyer has been assigned to direct a series of Buck Jones pictures for Columbia . . . . Often wonder how a lot of film companies ever accomplish anything when you almost daily read announcements of changes of big executives . . . . wonder how Standard Oil or Shell would make out if such were the case in their organizations . . . . Stability makes for efficiency . . . . if we know anything about it . . . . No man can give his best work if he is wondering whether or not he will lose his job the next day.

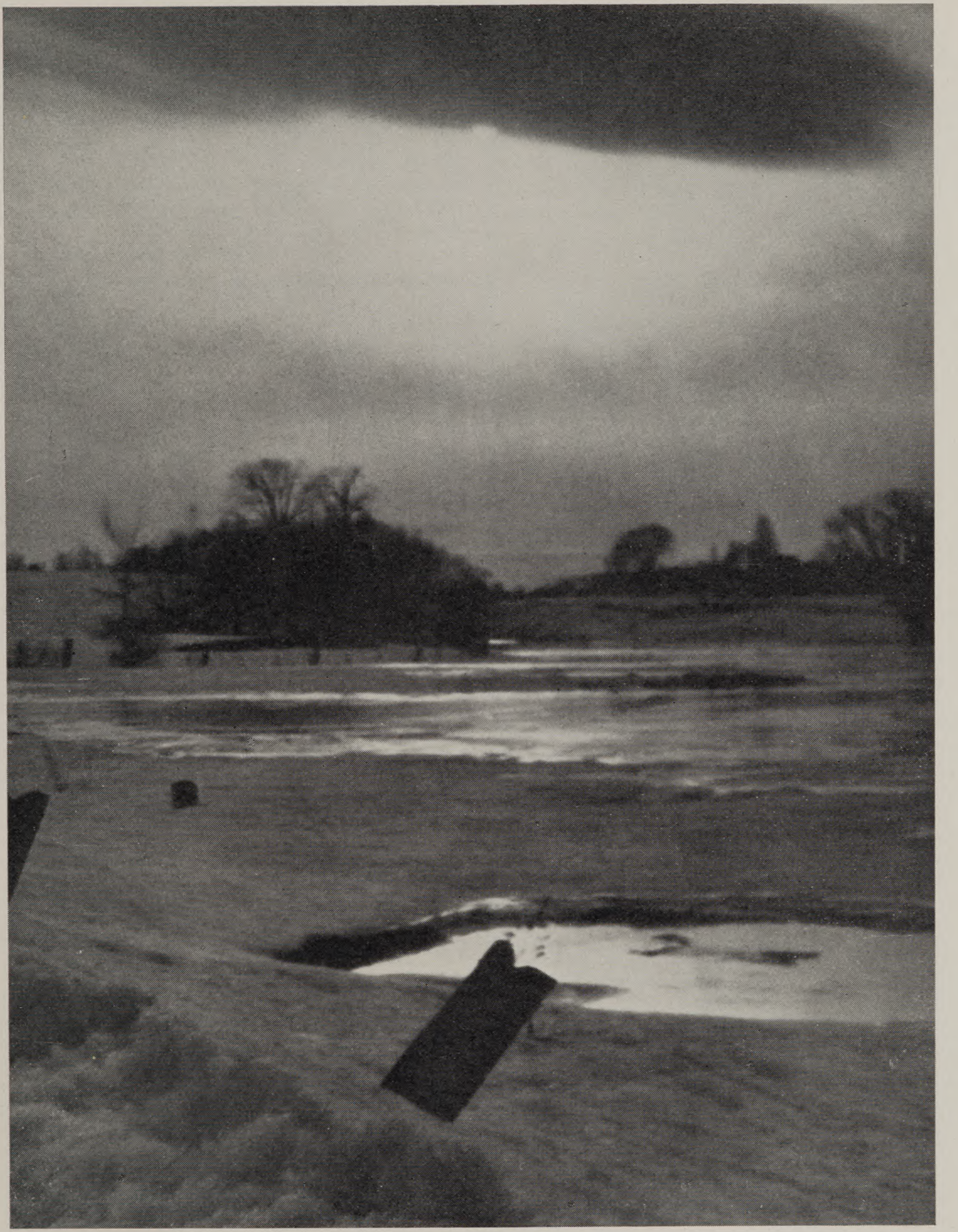


Icy Shore **Harry Adams**



Network of Industry **Clarence Slifer**

Tiles **Clarence Slifer**



Winter on the Marsh **H. M. Armstrong**

M-G-M Portable Outfit

(Continued from Page 10)

Noise reduction is secured by bridging the noise reduction amplifier (a single stage) across the output of the main amplifier. The output of the noise reduction amplifier is carried into a copper oxide-lead, full wave rectifier, a timing circuit, and a control circuit, and into the valve. Sufficient gain is provided to use up to 10 db noise reduction with a 6 db margin.

Valve tuning and checking is accomplished in a unique manner. The 9000 cycle oscillator mentioned above is connected to the input side of the valve repeating coils. By patching the P.E.C. amplifier output back to the volume indicator the latter gives a direct indication of the characteristic peak when the tuning point is reached. A direct measure of valve efficiency is obtained at the same time.

The plate battery for all the tubes is mounted in the amplifier box, together with fuses and space current jacks. This battery is also used as a supply for the microphone amplifier, P.E.C. amplifier and valve tuning oscillator. Filament supply for the tubes is obtained directly from the storage battery box, where three cells are set aside for this purpose.

Motor System

The recording machine motor and the two camera motors are of the "DC interlock type"; that is, they derive driving power from a source of direct current, but by means of 3-phase slip-rings on each unit an interlock between units is maintained. The motors receive their power from a 110 volt supply in the two storage battery units. The recorder motor has two poles, and operates at 2880 R.P.M., while the camera motors have four poles and operate interlocked with it, at 1440 R.P.M., the interlock frequency being 48 cycles per second. By suitable construction of each of these units, it is possible to obtain extremely good hand regulation of speed, and to provide a very strong interlock between units. In addition, the whole system may be started in the interlock condition, which is a very desirable feature where synchronizing marks are difficult to obtain. In the development of this motor system, considerable difficulty was at first experienced with the control of speed when a camera was attached, particularly in the case of the Mitchell camera, which has an inherent unbalance in its reaction upon its driving motor. This represented considerable of a problem until steps were taken to design greater stability into the motor units themselves. The solution finally obtained is completely satisfactory for the purpose.

Speed control is obtained by means of a field rheostat, which is mounted in the amplifier unit, and an indication of the speed is obtained through a vibrating reed type of tachometer connected to the 48 cycle output side of the motors. With storage battery power supply, the speed, once set, is sufficiently stable to permit of musical recording without observable speed variation in the reproduced results. From this standpoint the apparatus is quite equivalent to a standard channel.

The recording machine driving motor includes several very unique features. In the first place, it operates as a driving motor interlocked with the camera motors, to provide a source of driving power for the recorder. In addition, by means of an extra winding and commutator, it supplies up to 60 watts at 6 volts, direct current, to operate the field winding of the valve magnet and the filament of the exciting lamp. Inasmuch as the ratio between this 6 volt supply and the 110 volt original supply is fixed by the dynamotor winding, the exciting lamp voltage remains essentially constant over a period of several hours with ordinary intermittent use of the outfit. A rheostat and meter are provided for adjustment and control. The use of the driving motor as a power supply for the lamp serves a useful purpose, in that lamp supply becomes available at the exact instant when desired for recording, but is never wasted between shots. If, however, it is desired to check the valve or the P.E.C. monitor circuit without using film, a hand-operated clutch between the driving motor and the rest of the machine isolates the motor and permits the lamp and valve to be operated.

Starting and stopping of recorder and camera motors may be done at any motor position, but the arrangement of the equipment is such that the recorder operator most readily handles this control. The time of starting and stopping is so small as to be negligible. As an example of this, there is a case on record where the machine has actually recorded a part of the order from the director to start the system.

Battery Supply

The 110 volt motor supply batteries and the 6 volt filament supply batteries are mounted in two carrying cases, each case containing half the batteries. These batteries are of 12 ampere hour capacity, adapted to fairly rough handling, and weigh a total of 180 lbs. or 90 lbs. per unit. One cable, having a single plug at either end, connects the two units together, and an additional single cable connects power from them to the amplifier unit, from which it is distributed to the others. For charging, either 110 volt D.C. or A.C. may be used, by means of a charging resistance or a tungar rectifier or, in cases where it is desired, a commercial type gasoline-driven motor generator set is available. This unit is very satisfactory for the purpose. It consists of a single cylinder, gas engine, driving a 110 volt, 1½ K.W. generator, and weighs a total of about 100 pounds. It is not intended that this unit will be used for ordinary locations, but solely where a distance from the base is great, or the type of location is such that independent charging facilities are required.

Microphone and Cable Unit

Inasmuch as a microphone and cable are definitely required for every operation, a carrying case is provided for them. In the center of this case is a cylindrical compartment which houses a bomb microphone of standard M-G-M design. The outside of this compartment serves as a hub upon which revolves a drum which carries 250 ft. of 6-conductor cable, broken up into convenient lengths for interchangeable use with cameras and microphones. The whole unit weighs but 73 pounds, and serves as a very convenient means of transporting these necessary parts of the system.

Spare Parts

The spart parts are a very essential part of the portable unit of any type. At the studio, repair parts are readily obtained with a minimum of delay, but on location work the lack of any particular replacement part involves the loss of considerable time. The list of spare parts for this portable recorder was given a great deal of study to reduce it to a minimum, and yet, at the same time, to provide sufficient material for even more than ordinary repairs. The majority of the spare parts are carried in the base of the recording machine, which is hinged to provide ready accessibility. They include such items as the following:

Spare valves,

Hydrometer for testing batteries,

Tape,

Miscellaneous screws and wire,

Spare condensers for microphone,

Ribbon for tuning valves,

A microscope and jig for checking valve spacing and adjustment,

Oil and cleaning liquid,

Spare tubes.

The microscope for checking valve adjustment deserves special mention. It is the standard studio type of microscope but with a special mounting which enables it to be fastened to a holder on the recording machine itself. Thus, the recorder serves as a solid base for the delicate operations of tuning and adjusting valves. The microscope and adjusting instruments are carried in the cover of the recorder box when not in use.

Operation

The normal operating crew for an apparatus of this type in studio work, is two men; but the arrangement is such that one man may operate the entire unit without difficulty. With the units stacked, as shown in Fig. 1 above, it will be seen that all of the control points are readily available at the amplifier box. In addition, the recorder is mounted not more than a foot or so away, so that the threading of film may be done without changing from the mixer position. This arrangement is of importance in production, as there are many times where conditions are such that but one man may be sent out, because of some peculiarity of the location. For transportation the outfit involves a group of 6 boxes.

The outfit has been in use in production for some time, and has given completely and uniformly satisfactory results. In operation, it is much preferred by the recorders over the standard equipment, from the standpoint of convenience and ease of operation. The quality of the product obtained with it has been at least equivalent to normal studio results, and in some cases it has been felt to be superior. In any case, it represents a definite improvement over previous semi-portable apparatus, and enables recording in locations where such work was formerly quite impossible.

The outfit was completely designed by the Sound Department of Metro-Goldwyn-Mayer Studios, and constructed at the studio. The author is indebted to Mr. O. L. Dupy for the evolution of the motor driving and control arrangements; Mr. O. O. Ceccarini for the amplifier and noise reduction development; and Mr. C. S. Pratt for the solution of many of the problems which occurred in the course of the design and construction.

◆

New "Rico" Quarters

TO MEET the demands of their growing business the Radio Installation Company, and E. H. Hansen Laboratories are moving to their enlarged quarters at 6059 Santa Monica Blvd., Hollywood.

With over 3,000 square feet of available floor space the new plant will have spacious show rooms, offices, machine shop, research laboratories and projection facilities. Everything necessary for the complete testing of sound recording equipment will be provided and development of new apparatus will be speeded up. An important announcement of the new "Full-Range" recording system will be made in a subsequent announcement.

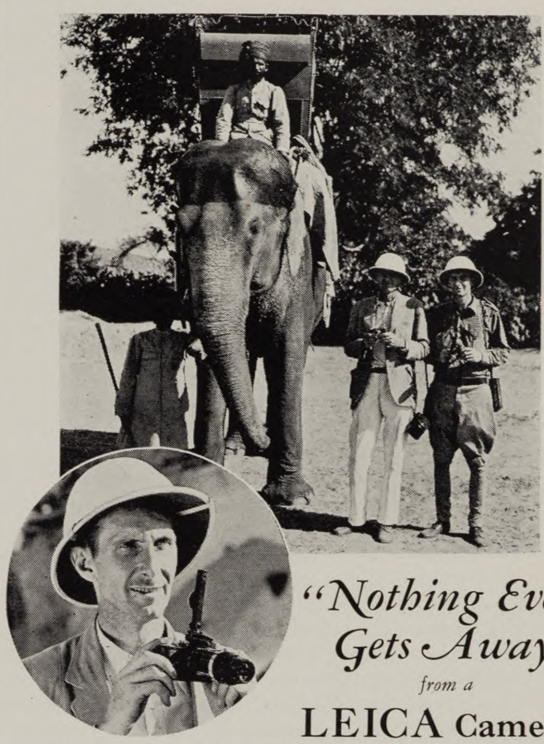
To handle the Far East markets C. W. Faulkner is leaving at once for India to establish the necessary branch offices. Other engineering representatives are being assigned to Japanese and Chinese branches, under the supervision of W. E. Deming, executive manager of RICO.

◆

Rule On Talking Rights

THE Paris law courts have decided that the talking picture is but a development of the silent picture and that film rights include the talking picture rights. The verdict was reached in the action brought by Maurice Lehman against Osso Films which made a talking version of "L'Aiglon." M. Lehman holds the stage rights. The court held that film rights (which includes the talkie rights) remained vested in Rostand's heirs, Lehman having acquired only rights for a stage production. The decision is one of great importance to the French film industry.

LEICA "On Location" in India with G. F. and E. B. Schoedsack, *Paramount Photographers.*

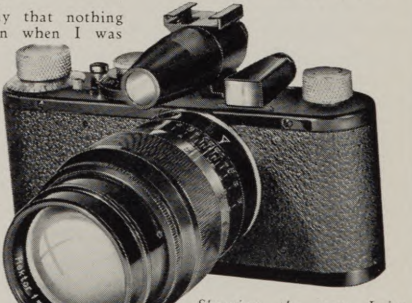


"Nothing Ever Gets Away"
from a
LEICA Camera

"Have just returned from INDIA with my brother, Ernest B. Schoedsack, who directed scenes for the Paramount Publix Film, 'THE LIVES OF THE BENGAL LANCER.' As the picture is to be completed in Hollywood this year, it was necessary for me to make a great many stills for reference in reproducing settings and costumes in the studio.

"For this work the LEICA was unequaled. I always carried two of these cameras and have come to consider the LEICA as a part of my clothing, rather than as a part of my equipment, for I am never without them.

"I can truthfully say that nothing ever gets away, even when I was on location, making tiger pictures with the LEICA Camera. Interesting street scenes, character studies of natives, subjects that cannot be posed and will not wait, my LEICAS get them all without fail and the quality of the negatives leaves nothing to be desired." — **G. F. Schoedsack.**



Showing the new Leica 73 mm. HEKTOR f 1.9 speed lens mounted on camera.

Leica
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The Universal Camera

WITH 6 INTERCHANGEABLE LENSES

Amazingly versatile, speedy and accurate, the LEICA Camera is yet so small and light you can put it in your pocket and take it anywhere! It is the perfect "still" camera for every cinematographer, amateur or professional. With its 6 interchangeable lenses, it gives you many cameras in ONE—a "speed" camera, a panoramic camera, a telephoto camera, an aerial camera, a portrait camera and many more. Economical—takes up to 36 pictures on a single roll of cinema film. Enlargements to 12 x 18 inches or more are wonderfully sharp and clear. LEICA negatives can also be printed on positive film for screen projection.

Write for Free Booklet
describing the Leica Camera, to Dept. 77.

E. LEITZ, Inc., *60 E. 10th St.,* **New York**

Concerning Cinematography

Critical Comments on Current Pictures

by **WILLIAM STULL, A. S. C.**

"ONE HOUR WITH YOU"

◆ This is far and away the best picture yet turned out by the redoubtable Chevalier-Lubitsch-Milner combination. Even as there is no director who can quite approximate Lubitsch's inimitable touch in directing these frothy, polished musical films, neither is there another cinematographer whose technique is so adapted to such pieces as is that of Victor Milner, A.S.C. Every scene reflects the mood of polished gayety which characterizes the picture. Although the lightings lack the originality of those in "The Broken Lullaby," they are no less perfect, and display the players and sets to the maximum advantage. There is a good bit of camera-movement, but, as in all Lubitsch pictures, it is used intelligently, and for a definite dramatic purpose. The process work is excellent.

But the outstanding feature of the film, technically, is the extensive use that has been made of tinted-base positive stock for the release prints. The picture owes much of its visual charm to the fact that all of the night interior sequences have been printed on Candleflame stock, and the night exteriors on Lavendar-based stock. Mr. Milner and Mr. Lubitsch deserve a vote of thanks from the cinematographic community for having persuaded the Paramount powers that be to take this step. And—the sound engineers who have held that tinted-base stock injured the quality of the reproduced sound should by all means see this film, for (to this observer, at least) the quality of the sound on the tinted portions of the film was distinctly better than that on those for which ordinary untinted film had been used.

"SHANGHAI EXPRESS"

◆ Here is another film from Paramount which is deserving of mention as an example of perfect cinematography. Lee Garmes has here achieved a notable example of purely pictorial cinematography. Every scene is a gem of photographic pictorialism—perfect in conception, composition and cinematic execution. In addition, there are several closeups of Marlene Dietrich which are literally breath-taking in their sheer beauty. They rank as the best individual scenes of many a year.

The picture is well directed and excellently acted, but it is above all a cameraman's triumph, for it shows how far superb cinematography will go toward making a great picture out of an otherwise undistinguished story. Together with the photography, the sets and the manner of their dressing establish a remarkable atmospheric effect; long after story and acting have passed from the viewer's mind the atmosphere of China —not perhaps the China of fact, but the inscrutible and chaotic China which we conjure up in our minds after perusal of the latest war-bulletins—will remain.

"CARELESS LADY"

◆ Students of cinematography can learn a great deal from a careful study of this production, which was photographed by John F. Seitz, A.S.C. and George Schneidermann, A.S.C. The picture was begun by Mr. Seitz, who was unfortunately taken ill midway through the production, and finished by Mr. Schneidermann. The resulting picture offers an interesting study of the methods of these two excellent cinematographers, whose artistic styles are widely divergent. Mr. Schneidermann has so excellently adapted his technique to the task of matching Mr. Seitz' scenes that only a technician can say "Here is a scene by Seitz, and there one by Schneidermann."

Viewed as a whole, the picture offers an interesting thought in its treatment of the "ugly duckling" plot. In the early sequences the photography is plain and straightforwardly newsreelesque, to accentuate Joan Bennett's characterization. When, however, Miss Bennett's role is metamorphosed into the strikingly beautiful person that she really is, the photography takes on all of the studio embellishments which naturally are used to display feminine stars. It is a very effective conception.

"DISORDERLY CONDUCT"

◆ Ray June, A.S.C. has turned in another excellent piece of cinematography in this fast-moving little comedy. The picture opens with an excellently photographed night sequence, and continues through a wide range of sets and photographic moods, all of which are expertly treated, and deserving of study by both amateur and professional cinematographers. It may be mentioned, too, that Spencer Tracy has never been photographed so sympathetically before.

"ARSENE LUPIN"

◆ The primary attraction of this film is, of course, the teaming of the brothers Barrymore, but the photography, for which Oliver T. Marsh, A.S.C., was responsible, deserves equal billing. It is thoroughly satisfactory throughout, both in the more restrained sequences and in the melodramatic ones which gave Mr. Marsh interesting opportunities in lighting. There was, perhaps, a shade too much camera-movement, but the photography is, like the performances of the stars, rather more than adequate, if not at all Marsh's best.

"SHE WANTED A MILLIONAIRE"

◆ This picture is rather surprising, for it begins as an innocuous little comedy-drama, and ends up as a wild melodrama. This must have offered John F. Seitz, A.S.C., who photographed it, quite a variety of problems; but the result is eminently satisfactory. In the later (and more melodramatic) sequences in the French Chateau, Mr. Seitz has achieved some very interesting effect-lightings, which are worthy of study by all who are interested in cinematographic effects.

"DANCERS IN THE DARK"

◆ This picture is a waste of time for all concerned. It is entertaining enough, but hardly justifies the talent expended upon it. While it is photographed expertly by Karl Struss, A.S.C., it does not show the same perfection that some of Struss' previous films as "Dr. Jekyll and Mr. Hyde," "Coquette," and "Sunrise" have shown. It is likewise a photographic as well as a dramatic setback for Miriam Hopkins. There are plenty of cinematographers whose skill is quite adequate to such films, but few who are, like Struss, capable of photographing a "Jekyll and Hyde." While, of course, all productions cannot be specials, and equal to the attainments of their makers, using Struss' great talents for such a film as this seems as unworthy as using the Philadelphia Symphony Orchestra to play the Peanut Vendor.

"BROKIGA BLAD"

◆ Occasionally Hollywood enjoys the privilege of seeing films from the more remote corners of the earth. "Brokiga Blad" is one of them: the first Swedish talkie to appear. It is skillfully photographed by Herr Ake Dahlquist, who has done an excellent job with a minimum of technical resources. Such pictures as this should be frequently seen by every technician in Hollywood, that they might fully realize the perfect working conditions existing in our studios. Herr Dahlquist's treatment of the comparatively few interiors in this film is excellent, and his lightings natural. We are eager to see a regular dramatic picture from this gentleman's camera.

Art

by **JOHN ARNOLD**

President, American Society of Cinematographers

THE cinematographers of today are an unique group. I doubt if there exists another such body of men as these, whose work demands that they combine the roles of artist and scientist. Certainly, there can be no group of artists who have made such great contributions to the purely technical and scientific phases of their art, nor a group of technicians who have to their credit such outstanding artistic triumphs.

Account has previously been given of the technical progress of cinematography, and of the portion thereof for which cinematographers, individually and collectively, have been responsible. Have their efforts in the artistic phases of cinematography been as productive?

Unquestionably, they have. This is the verdict, not alone of this writer, nor of the industry, but of the vast army of critics and the ultimate judge—the public. It may perhaps be most easily gleaned from the thumbnail reviews printed in many of the trade, fan and lay journals; regardless of the comments upon the story, direction, and acting—which range from "great" to "bad"—the comment on the photography is almost invariably "excellent." A rating of "poor" for photography is rare indeed nowdays, and one of "bad" is unheard of.

This is a very satisfactory state of affairs, indeed, but it becomes far more than that when the artistic problems of cinematography are considered. For cinematography itself is unique among the graphic arts in that it involves not only form, line, and light and shade but also movement. When the older arts of sculpture, painting and their subsidiaries, and the newer art of still photography deal with these things, and attempt by them to suggest motion, cinematography alone deals with motion itself. This at once widens the artistic scope of cinematography and vastly increases its artistic difficulties. For not only must the relatively static phases at the beginning and end of each movement be an artistic composition, but so must every intermediate phase—no matter of how short duration—and the motion itself. Furthermore, not only may the actual objects within the picture move, but also the camera itself. This, in competent hands, gives rise to infinite possibilities—and in inept ones, to infinite peril. That cinematography is today a recognized art-form is a high tribute to the skill and artistry of our cinematographers; the more so since these men have not merely practiced a time-honored and known art, but pioneered and created a new one. Their progress and achievements are thus doubly inspiring.

At its inception, cinematography was in no sense an art. Quite the contrary! It was merely the mechanical job of running a motion picture camera and reproducing—no matter how—motion. It was not until long after the introduction of the dramatic element that cinematographers and others in and out of the industry began to discover that cinematography was not merely a reproductive mechanical operation but a creative art.

In the score or more of years that have elapsed since that time, the cinematographers have created a new art-form and a new artistic technique. There have been no established rules nor precedents to guide them; no known technique to follow. They have been forced to adapt what they could from the underlying principles of the other graphic arts, and to create the rest—and this has been the major part—as they progressed. And none of this has come from definite study or experimentation in the accepted sense, but has been evolved, perforce, in the course of actual commercial production. It has developed through the necessity of a technique for telling stories in moving pictures.

To this end, the mechanical and scientific advancements brought forth by the various engineering and scientific bodies have been accepted and adapted to suit the requirements of the growing art, while time and again individual cinematographers have evolved technical devices and methods in order to meet the demands of individual story situations, or to enable them to attain certain artistic effects which they might require.

For, first and last, cinematography must make itself the vehicle for the telling of stories. It may not digress to chant its own praises, nor to exhibit the artistry of the individual cinematographer. It has therefore developed an unique group of artists, and an unique artistic ideal. Briefly, that ideal is to so perfectly suit the cinematography to the story that the former is imperceptible, and the latter is subtly heightened. To do this requires the greatest artistic skill, for the cinematographer's work is the vehicle through which the contribution of every other member of the company is brought to the screen; only if the camerawork is perfect can the rest appear to their fullest advantage.

The dramatic uses of cinematography can be only hinted at in so limited space as is here available. It is not alone the purpose of the cinematographer to show that which the story requires to be shown, and to conceal that which it requires to conceal, but to match the visual impression given by the photography of every scene to the dramatic impression that is to be given, not alone by the scene, but by the entire production. If this be done successfully—and it is in the majority of cases—the visual quality of each scene serves like the overture to an opera, and subconsciously prepares the minds of the viewers so that they are psychologically receptive to the dramatic action taking place.

But not only must the visual mood of each scene correspond to the scene's dramatic mood, but to the dramatic mood of the entire picture. So, too, must the photography sustain the dramatic mood of the picture throughout. This is done primarily with lighting. The attention of the audience is concentrated upon the relatively small area of the screen; therefore they cannot escape being subconsciously influenced by even minute variations in the keying of the lighting. If the picture is basically a sombre drama, and thus photographed in sombre lower-keys, and scenes or sequences of a lighter dramatic mood are photographed in somewhat higher keys, the audience, subconsciously noting the visual difference, will be more receptive to the changed dramatic mood than could otherwise be expected. The same holds true of every other type of action and dramatic-pictorial contrast.

The next logical step in this direction is undoubtedly the more general use of color-cinematography and colored lighting. Already experiments have shown a few of the possibilities lying in this direction. All that is lacking is a greater confidence in the possibilities of color on the part of executives, and technical improvements in natural-color cinematography which will render it a more stable commercial proposition. Cinematographers generally, I believe, realize the infinite potentialities latent in color cinematography and colored light-sources, and await only the opportunity to prove them.

Returning to the present, a most satisfactory phase in the artistic development of cinematography is the manner in which the art of cinematography is developing along nationalistic lines. Each nation which boasts any sort of an established film industry is developing a distinctly individual artistic style of

(Continued on Page 48)

Bell & Howell Celebrates Silver Anniversary

THIS month the Bell & Howell Company will celebrate the silver anniversary of its founding, and in this connection it is interesting to recall some of the events in the progress of this company from its small beginnings to its present substantial position in the motion picture industry.

When, in 1907, the Bell & Howell Company was founded in Chicago by Mr. Albert S. Howell and Mr. Donald J. Bell, the motion picture industry was in its infancy. Each and every producer was following his own whim insofar as size and perforation of film were concerned. Plots were simple, acting amateurish, and about the only thing to be said for the motion pictures of the day was that they showed motion. You who remember the early movies will hesitate to compare them with the super-productions that you witness in the theatres of today.

No small part of the advance toward movie perfection is due to the activities of the Bell & Howell Company which has set many standards for the industry by designing cinemachinery of outstanding quality.

From the very first Mr. Howell, the engineering genius of the company, saw the need for standardizing the width and perforations of film. The multiplicity of film types in use made the distribution of finished pictures difficult and severely limited. The situation was little less than chaotic. With the need for uniformity always in mind, Bell & Howell built but one type of equipment—that for handling 35 mm. film, which they considered the correct theatrical size, with what they considered the most suitable perforation. Although repeatedly asked to build equipment for special size film with various perforations, the company held steadfast to its purpose. And the 35 mm. film which they were built to use became, largely for this reason, standard for the industry. This standardization is one of the big events in the progress of motion pictures, for it meant that any theatre could show the photoplays of any producer. In 1907, '08, '09, the new company designed and built perforating machines, film printing machines, and motion picture cameras—all for 35 mm. film.

With the Bell & Howell standard perforator assuring absolute accuracy in the construction of the film, and the 35 mm. camera and printer making available features and precision otherwise unknown, the producer could accomplish results and effects which added tremendously to the interest and acceptability of motion pictures. Then the movies began taking their paramount position as an unequaled entertainment feature. In 1917 Mr. Bell's interest was purchased by Mr. J. H. McNabb, who at the time was general manager of the Bell & Howell Company. With him as associates came Mr. R. J. Kittredge and Mr. C. A. Ziebarth, the latter now secretary of the company. Today Mr. McNabb is president of the company and Mr. Howell vice president.

Searching for larger markets, Mr. McNabb and his associates saw the great appeal that amateur or home movies would make to the general public. Here again the Bell & Howell Company stuck to 16 mm. as a standard. By 1926 the world-wide acceptance of the Filmo camera and projector for amateur use had reached such proportions that the Bell & Howell Company had constructed a new building, increasing their factory and office space many times. By 1929 more than 1200 employees were associated with the Bell & Howell organization. Into this new factory came men from every part of the world to study the manufacture of Filmo equipment so as to return to their own countries to act as distributors and to set up service stations for Filmo cameras and projectors.

In addition to the long established Hollywood and New York offices was added Bell & Howell Company, Ltd., at London to serve the amateur and professional cinematographers in the British Isles, and to maintain a closer contact with customers in Europe.

Continued growth also made it necessary to establish Filmo A. G. of Central Europe at Zurich, the Filmo Company of Holland, and other service stations at strategic points throughout the world either under the company's name or in the name of old connections who had been handling Bell & Howell's products in their respective markets.

In 1929 the Bell & Howell Company's engineering laboratories housing several hundred engineers and designers were opened on Rockwell Street in Chicago to relieve the congestion in the factory which, when constructed three years previously, was thought to be amply large to care for the company's requirements for many years to come. The Bell & Howell laboratories are a distinct contribution to the motion picture industry because assembled in them, under Mr. Howell's direction, are a group of engineers who have grown up with the motion picture industry and are in a position to take care of any technical problems arising in the ever changing motion picture industry and to help point the way to new advances and discoveries.

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RCA-Victor Cuts Its Prices

WITH an announcement covering the introduction of two new all AC operated equipments which have been designed for the theatres up to 4,000 seating capacity, a substantial reduction in the prices of three types of apparatus, a further reduction in service charges and an entirely new merchandising policy, E. O. Heyl, manager of the Photophone Division of the RCA Victor Company, created something of a sensation at the conventions of the Allied Exhibitors in Detroit and the Motion Picture Theatre Owners in Washington last month. In making his unexpected announcement, which was received with unanimous acclaim by the assembled exhibitors, Mr. Heyl said he was transmitting to them the first fruits of the economies resulting from the recent consolidation of RCA Photophone with the RCA Victor Company and that he hoped that exhibitors all over the country would recognize its importance.

The two new all AC operated sound reproducing units, which Mr. Heyl referred to as the Standard Large, for theatres having from 1,400 to 2,500 seating capacity and the Standard Super, for theatres having from 2,500 to 4,000 seating capacity, are the only standard equipments operated by AC power supply that have been designed for theatres of the capacities mentioned. In addition to the convenience provided by the elimination of batteries and motor generators and the resultant saving in upkeep and installation cost, the prices of these two equipments have been reduced. Heretofore the so-called Super Size Equipment's lease price was $8,000. The price of the new Standard Super, all AC operated, is $5,000. The former price of the Standard Large equipment was $6,000. The price of the new Standard Large, all AC operated, is $3,750.

Mr. Heyl also announced that the seating capacity limitations of the all AC operated Special Size equipment has been increased to 600 seats; the Standard Small Size to 1,400 seats and the Standard Large Size to 2,500 seats. Service charge reduction from $32.50 to $25.00 a month on the Special Size equipment; from $65.00 to $32.50 on the Standard Small Size equipment and a reduction from $130.00 for four contract calls to $65.00 for two calls monthly on the Standard Super Size equipment and a reduction in the financing interest and collection charges also were announced.

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New Portable Projector Is Developed by Carlton

DEVELOPMENT of a new portable sound-on-film projector said to consist of several unique and novel features for this type of equipment has been announced by the James L. Carlton Laboratories of Elmhurst, N. Y.

WHAT DOES YOUR PUBLIC KNOW ABOUT RAW FILM?

NOTHING, perhaps. Yet, whether they're aware of it or not, people are profoundly influenced by the *photographic quality* which that film gives or does not give them on the screen. It may mean all the difference between a picture that goes its quiet, unprofitable way and one that becomes the talk of the town.

There's no need, these days, to run the risk of sacrificing photographic quality. Eastman Gray-backed Super-sensitive Negative, with its unmatched qualities and its never-failing uniformity, costs no more than other films, yet it helps substantially to head the picture for success. Wise the cameraman who uses it... lucky the exhibitor who runs prints made from it!

EASTMAN KODAK COMPANY

J. E. Brulatour, Inc., Distributors
New York Chicago Hollywood

..In the Realm of Sound..

Less Clothes, More Sound

AN UNUSUAL, and perhaps little considered, element of theatre sound reproduction to be considered in designing theatres and large auditoriums is brought to light by Paul R. Heyl, of the Bureau of Standards, Department of Commerce, in a circular recently prepared by him on "Architectural Acoustics." He points out that because of the lighter apparel of modern women, sound is more audible in theatres today than in years past when women wore countless layers of underskirts and more voluminous outer clothing. This because clothing absorbs sound. The less clothing, the less sound absorbed.

The circular in part says that in calculation of the amount of sound absorbing material necessary, allowance must be made for the absorption of the audience. Because of the fibrous character of clothing material each person is equivalent in sound absorption to perhaps 10 to 12 square feet of acoustic plaster. Experiments conducted in 1895 by Professor W. C. Sabine of Harvard University showed that, in a mixed audience made up about equal numbers of men and women, the average per person was about 4.7 units of sound absorption.

Similar experiments conducted recently at the Bureau of Standards have given only 3.9 units. As experiments on audiences consisting wholly of men gave practically the same figure as those obtained by Professor Sabine over 30 years ago, it appeared that the difference was to be ascribed to changing feminine fashions.

To confirm this, experiments were made on an audience of women with and without coats. The results obtained were respectively 2.3 and 4.0 units of absorption.

Similar figures for men with and without overcoats were 4.1 and 4.8 units.

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Massachusetts and R.C.A. Victor

FOURTEEN Massachusetts state institutions including eleven hospitals and three juvenile schools for mental defectives soon will provide sound motion pictures for the entertainment of inmates and staffs. Contracts have been drawn by G. J. Cronin, commissioner and purchasing agent of the Commission on Administration and Finance of the Commonwealth and purchase orders have gone forward for the installation of Photophone apparatus which is manufactured by the RCA Victor Company in Camden, N. J. This is claimed to be the largest contract of its kind ever consummated and closely follows one recently awarded to the same company for the installation of twelve similar sound reproducing units in hospitals and schools by the State Board of Control of Texas.

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New Type Monitor

A NEW type of sound mixer or monitor desk has been designed by Porter H. Evans, chief engineer at the Warner Vitaphone studios. By means of this the monitor man is able to supervise sound recording directly from a position beside the cameras on the stage.

Warner Vitaphone, by putting the monitor desk into use, has gone direct from a fixed monitor room off the stage to this new device, thereby hurdling the in-between type of portable monitor booth used by most other studios.

Syncrofilm Portable Sound Head

MANUFACTURERS of Syncrofilm sound equipment announce completion of a new sound reproducing attachment for all makes of 35 mm. portable projectors. This sound head represents a new departure from the conventional practice in that the projector is driven from the sound head. The use of this sound head facilitates changing over any 35 mm. projector to combine sound reproduction, without making alterations to projector mechanism. The driving motor is within the sound head unit, which insures a smooth even feed of film at light source or point of reproduction.

The projector is driven from sound head by means of a flexible shaft, which is of sufficient torque elasticity to prevent any unevenness in projector transferring back to driving source in sound head. Provision has been made for maintaining a loop of film between projector and sound head, thus preventing any projector mechanism imperfections from interfering with the positive feed of film in the sound head. This feature also eliminates the necessity of perfect alignment of projector and sound head. The film control mechanism in the sound head are of the finest material and workmanship. Film sprocket is hardened and ground intermittent type. All bearings are special bronze alloy or ball bearings.

The optical unit is of the slitless type, which has made Syncrofilm sound heads outstandingly successful. This type of lens system produces a more intensive line of light within a given width than is possible to obtain by any other known method. The front lens combination or projection lens is highly corrected and operates at f 1.3. All parts subject to wear through film contact are chromium plated. The case is of special aluminum alloy, finished in black crackled enamel and having a convenient leather handle for carrying. Polarity plugs are built in the sound head to facilitate easy and rapid connection of supply lines to amplifier.

In operation the film is drawn over the light aperture in film control drum by means of a perfectly filtered driving mechanism which is independent of the projector, thus faithfully reproducing recorded wound without distortion, irrespective of any projector defect.

These sound heads can be supplied separately or including amplifiers and speaker. The amplifier is suit case type, very compact and having dynamic speaker mounted in cover, built for complete A. C. operation and can be used for either one or two projectors.

◆

R. C. A. For Burton Holmes

BURTON Holmes Lectures, Inc., the internationally-known motion picture lecture bureau and the foremost producer of the so-called travelogue type of screen subjects in the world, has contracted for the installation of RCA Victor Photophone recording equipment, according to an announcement made yesterday by E. A. Nicholas, vice-president and general sales manager of the RCA Victor Company at Camden, N. J. Under the provisions of the contract entered into between the two companies, Burton Holmes Lectures, Inc., becomes an RCA Victor Company license and hereafter will record its sound motion picture product by the Photophone system.

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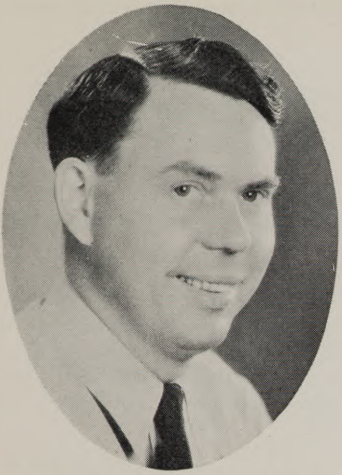

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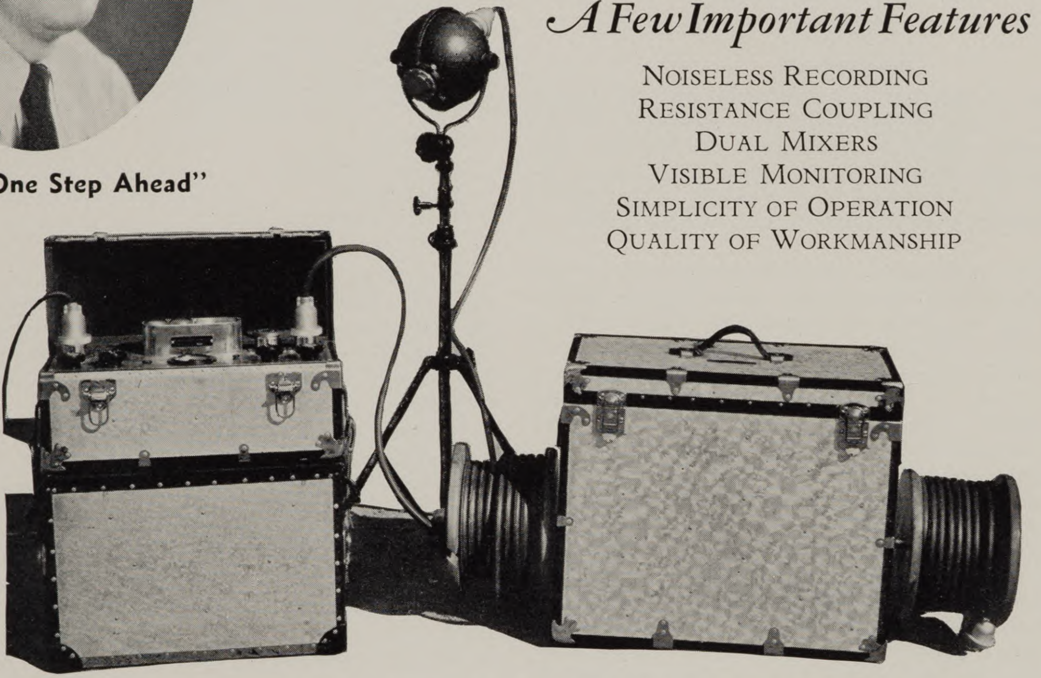

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Laboratory Department

Conducted by **EMERY HUSE, A. S. C.**

Principles of Sensitometry and Their Practical Application

PART 12

Development

THE subject of exposure was concluded with the detailed description of the Eastman Type 11b sensitometer. At this point the general subject of development will be dealt with, giving considerable thought to the purely sensitometric side of the subject, but in addition to that details of the practical side of development from a motion picture film standpoint will be given.

From a purely sensitometric standpoint considered on a more or less theoretical basis, development, which includes the developer and the conditions of development itself, must be standardized and maintained just as the instrument for impressing the initial exposure is standardized. Sensitometry as practiced in a research laboratory is somewhat different and much more detailed than the sensitometry which is practiced, for example, in a motion picture production laboratory.

It is quite well known that the characteristics of any photographic emulsion as determined sensitometrically, following the prescribed Hurter and Driffield method, are to a marked extent influenced by the developing solution and to the factors of development in this solution. Each chemical in a developer plays a very definite part and the reducing agents themselves produce different effects, depending upon the type of the agent and on the different proportions of the developer constituents. The most simple developer must contain a reducing agent, an alkali, a sulphite, and a bromide. These elements are sufficient to reduce properly the exposed silver in a photographic emulsion. The effect of the variation of one or several of the constituents in a developer has been studied by many investigators. It has been shown that the variations in the constituents of the developer may modify the rate at which development progresses and as a result affect the shape and position of the characteristic curve, thus affecting values of contrast, (gamma), latitude, speed, fog, etc.

A detailed discussion of development could not be given without considering the studies of Hurter and Driffield in this field. In one of their earlier papers they very definitely recommended the use of a ferrous oxalate developer. This developer was of the slow working type but at the time of its recommendation proved to be quite a good standard from many points of view. It never became a very popular developer, due in part to the fact it required such long times of development to produce the desired image. It will be of interest to give here the ferrous oxalate formula which was used by Hurter and Driffield.

Hurter & Driffield—Ferrous Oxalate Developer

Solution A

Potassium Oxalate	1	part
Water	4	parts

Solution B

Ferrous Sulphate	1	part
Citric Acid	.01	part
Water	3	parts

Solution C

Potassium Bromide	1	part
Water	100	parts

For use take: 100 parts of A, 25 parts of B, 10 parts of C. Development should be carried out at a temperature of 65°F.

This ferrous oxalate developer of Hurter and Driffield's did not survive and later investigators into the theory of sensitometry, such as Mees and Shepperd, discarded the ferrous oxalate developer and adopted a pyrogallol developer. This formula was made up as follows:

Pyrogallol	8 parts
Sodium Carbonate (crystalized)	40 parts
Sodium Sulphite	40 parts
Water to	1000 parts

It is important to note that this formula contained no bromide. Relative to this Driffield says "this omission is of the utmost importance, and must be insisted upon, at any rate, when determining the speed of a plate. While the pyrogallol and the alkali are essential elements of the developer, a bromide is altogether unessential."

For many years a pyro developer of some sort was used very extensively in photographic practice and also in sensitometry conducted either from a research or a production control standpoint. While it might be considered quite true that bromide is an undesirable constituent in a developer adopted for sensitometric work, due to the fact that it causes variations in the speed values determined from the Hurter and Driffield curves, nevertheless a small amount of bromide is desirable from the practical point of view in order to prevent the excessive increase in fog when development time is extended. Many modifications have been made of the pyrogallol formula but listed below is a formula of the type which was used for many years for sensitometric work and found very satisfactory.

Solution A

Sodium Sulphite	876 grams
Potassium Metabisulphite	175 grams
Pyrogallol	200 grams
Water	10000 CC.

Solution B

Sodium Carbonate	750 grams
Potassium Bromide	10 grams
Water	10000 CC.

For use take equal parts of A and B.

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Film Cleaning Device

A NOVEL film cleaning device that is attached to projectors and is known as the Treatizor is being marketed by Blue Seal Products Co. of Brooklyn. The new device is said to remove oil, dirt, gum, grease and other waste from the film as it runs through the projector. In the same operation, new film is so lubricated that it will not cake on the tension shoes.

Simple in design and assembled in one unit, the device is attached by removing the top magazine and film valve casting, the Treatizor is then attached and the magazine replaced. A tank, which is part of the assembly, is then filled with a special fluid provided and, after a slight adjustment is made to regulate the flow of liquid, it is ready for operation. This tank adjustment also has a lead to a safety valve placed over the aperture which is automatically released should a fire break out in the top loop and thus would release the entire contents of the tank, putting out the fire.

S. M. P. E. Notes

by **SYLVAN HARRIS,** Editor-Manager of the S.M.P.E.

JUDGING from the great deal of attention the Society of Motion Picture Engineers is giving to the subject of recording and projecting 16 mm. sound film, this branch of the industry promises to become a very important one in the not far distant future. The Committee on Standards and Nomenclature of the S.M.P.E., together with its various sub-committees, has been working for some time, under the chairmanship of Mr. M. C. Batsel, in an endeavor to establish standards of dimensions for the film. This work is rapidly approaching completion, and it is expected that the standards will be up for ratification by the entire Society at the approaching Spring convention to be held at Washington, D. C., May 9th to 12th.

Two plans have been evolved, one providing for two rows of perforations, the other providing for a single row, the sound track being placed on the side away from the perforations. The latter is to be recommended for adoption as the standard film lay-out, the lay-out providing for two rows of perforations being offered as a non-recommended standard that may be followed if the development of the art so directs.

An interesting and valuable method of determining the various dimensions and tolerances for establishing such standards is described in the current (April, 1932) issue of the S.M.P.E. Journal. This method involves a consideration of all the variable factors to which the film is subject in recording, processing, and projecting; including shrinkage, making allowances for tolerances already existing in recorders and projectors, weaving of the film, and a number of other factors. This method, which was first described by Mr. R. P. May at the Swampscott convention of the Society, was presented to the Standards Committee for their consideration in establishing the dimensional standards for 16 mm. sound film.

A paper by Messrs. A. S. Howell and J. A. Dubray, also published in the current issue of the S.M.P.E. Journal, questions the validity of the present shape of perforation used in 35 mm. film, advocating the use of the same type of perforation for both negative and positive film, and indicating the shape of perforation that could be introduced without creating any difficulty whatever in making the change.

Although the portable synchronized projector, known as the Animatophone, employing disks for the reproduction of sound, has been known to the industry for several months, the principles involved in the operation of the vertical turntable and the floating pick-up have been described by Mr. A. F. Victor for the first time in the current issue of the S.M.P.E. Journal. The arrangement of this floating pick-up is such that the pressure of the needle on the disk can be made anything desired by simply moving the pick-up base toward or away from the disk. Arrangements are also made for constraining the needle always to track the record tangentially to the groove.

Not long ago, Mr. H. A. Frederick of the Bell Telephone Laboratories, demonstrated before the New York Section of the S.M.P.E. new disk records made of cellulose acetate, on which he employed the hill and dale method of recording. In the current (April) issue of the S.M.P.E. Journal, Mr. F. C. Barton of the RCA Victor Company describes new developments in the lateral method of recording on disks, employing disks made of a new material called Victrolac. This material is a thermoplastic resin that must be cooled before being removed from the mould. Mr. Barton presents in his paper a discussion of the characteristics of this material, the playing time of records made of it, the operating features of the tone arm and pick-up system, and the resonance characteristics of the tone arm itself.

S. M. P. E. Sound Committee Studies Variations in Negative Exposure

The Sound Committee of the Society of Motion Picture Engineers, as part of the program that has been set up for it to follow this year, has made arrangements for conducting an investigation into the various causes of the variations that occur in making negative exposures, the effects that they produce, and methods of controlling them.

It has been pointed out that variations of negative exposure may be attributed to the variations that occur in (1) the source of light, (2) the device in which the exposures are made, (3) the photographic characteristics of the film, and (4) the method of processing the film.

The variations of the photographic characteristics of the film may be excluded from the discussion, as, considering the fact that stock of the same general type is always used in a given studio, the speed and color characteristics remain reasonably constant.

As for the exposing devices, if the spacing of the light valve is checked properly and sufficiently often, no difficulty should be found in maintaining its characteristics sufficiently uniform. This applies as well to the slit used in the variable width systems, so that variations occurring in the exposing device may also be excluded from the argument.

Likewise, the source of light can be controlled reasonably well if proper attention is given to the adjustment of the exposure by suitably adjusting the electrical input to the lamp. However, the Committee feels that a standard method of measuring the effective exposure obtained, without having to employ a piece of processed film, is a subject that demands serious attention. Although various methods of making this measurement are in current use, it is doubtful whether these methods produce comparable, or even optimum, results.

On this account the Committee purposes to study the matter carefully, to look into the methods followed in making such measurements, and to recommend a method that would conduce to uniformity of results and the possibility of comparing these results. One suggested method involves the use of a photometer employing a photo-electric cell the color characteristic of which is approximately the same as that of the film to be measured. Such an instrument might be easily adapted to the recording machines, and would furnish a convenient and satisfactory means of controlling the exposure.

The Sound Committee has found that it is generally conceded that the most important cause of the apparent variations of negative exposure lies in the developing and processing of the negative film. Sensitometric measurements apparently fail to reveal this, due to the variations that occur in the developer with use and age; in addition various peculiarities of the developing machines themselves exercise their influence upon the density of the sound track. On account of these difficulties, the apparent exposures may vary even though the actual exposures to the light source are identical.

It is the Committee's intent to bring these matters to the attention of those engaged in the various phases of recording and processing, so that ultimately, all those variations that occur in commercial practice may be so reduced that uniformity of product will result, and that check measurements made in one phase will not be vitiated by undetected variations that occur in another.

Set Construction . . . and Recording

by **L. E. CLARK**

FOUR years ago, roughly speaking, the talking picture as a commercial product was born. Today every studio is making talking pictures exclusively. From this it would appear as though those of us who are concerned with the technical aspects of motion picture production should have behind us enough experience to know what should be done.

But do we?

In some respects, the answer must be "no." There are a dozen studios in Hollywood, for instance, and in them one will find a dozen different types of set-construction. One studio will insist on acoustically porous sets; another on sound-absorptive sets; a third will use plaster construction; a fourth, fabric; a fifth, compo-board—and so on down the line. By all the laws of logic, one of these studios should be making good recordings, and all of the others varyingly bad recordings; yet the actual facts of the case are that every studio, no matter what type of set-construction it may favor, is getting uniformly good recording—and all are managing to achieve an equal proportion of bad records.

Had this state of affairs existed four years ago, when nobody had had any practical experience in recording, it would have been only natural; but to have such a condition existing today is utterly unreasonable. By this time, we all of us ought to know just what conditions produce good records, and what conditions result in poor records.

But we don't. And—which is worse—we don't seem to do anything about it. We merely continue to accept things as they are, getting good sound and bad, without any attempt to find out why we do, or to determine, from our stock of experience, just what sort of set-construction is the best. We are all of us—recordists and art-directors alike—in the rut.

Obviously, we should snap out of it. For while we can probably continue to drift along as we are now doing for some time, getting the same results as we do now, we can't expect to make any progress. In order to progress, we must reawaken the spirit of inquiry that existed when we were all learning the business of making sound pictures. We must begin again to ask ourselves why this and that are thus and so. Sound men must begin to wonder why they prefer this type of set-construction or that one. Art directors must begin to inquire why they can't use this material or that.

Finally, we should pool our resources of experience in set designing and recording, and definitely determine what sort of a set it takes to make the best record. For it stands to reason that one type of construction must be better than others; it may be some existing type—or it may be something utterly new. But until we find it, we will be wasting our own time and energy, and our company's money, making pictures with sets that, while good enough, are still less than perfect. We are depending far too much upon the skill of the individual recordist and too little upon the laws of acoustical construction—upon facts which our four years of experience should by now have taught us.

Once we have determined these facts, I predict that our work will show a decided improvement. It cannot fail to, for we will all be able to work more freely once we are able to work from a basis of exact knowledge rather than of personal preference, luck, and somebody else's skill.

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New Image Size Adopted

GENERAL adoption by theatres throughout the United States and Canada during April and May of the new uniform image frame size for motion picture projection machines, established by the Academy of Motion Picture Arts and Sciences, will mark one of the final steps in the technical transition from the silent motion picture to the talking film.

Improvements in the photographic appearance of the picture on the screen will result from the recommendations, made by the motion picture production industry's cooperative organization after two years of surveys and researches.

Hollywood studios benefit by a similar Academy uniform image frame size in use since February 15, which permits speedier cinematography and more flexible technique in talking picture making.

Theatre managers and projectionists will receive through their exchanges, detailed instruction leaflets covering the change-over to the new system. The leaflets will accompany the new picture releases, many of which already have been photographed through the new Academy uniform camera aperture.

Uniformity in the size and shape of pictures as photographed in Hollywood and projected in theatres is attained by adoption of a uniform size for camera apertures and one for projectors.

The aperture is the camera's "eye," its size and shape limiting the area on the motion picture film, which will be affected by light rays during the photographing of a motion picture. Similarly the aperture in the projection machine limits the size and shape of the area of the film, which is to be projected in greatly magnified form upon the theatre screen.

The adoption of a uniform image frame size will result in a closer coordination between the cameras of Hollywood and the projection equipment of the theatres, eliminating at one stroke expensive and troublesome variances in photographic and projection practices, which followed upon the coming of the sound device to motion pictures.

Production and theatre companies adopting the Academy uniform image size, are: Columbia, Darmour, Educational, Fox, Hal Roach, Metro-Goldwyn-Mayer, Paramount-Publix, RKO-Radio, Mack Sennett, Tiffany, United Artists, Universal and Warner Bros.-First National.

Sound-Movies As An Aid to Visual Instruction

THE greater influence of sound motion pictures is very simply explained by educators in terms of "stimulus-response-current-units-of-time."

There is a definite ratio between the strength of the stimulus to which a mind is subjected and the response elicited by that stimulus. This stimulus-response—the action that takes place when an idea is communicated to the mind—is conditioned by the speed or time required to communicate the idea and secure a response in the mind. You can secure, for instance, an equally vivid and accurate mental impression of Yellowstone Park from a motion picture that takes only ten minutes of your time as you can from an article in the National Geographic that will take you at least a half-hour to read. The sound motion picture easily exerts ten to one hundred times as powerful an impression as a written account of its subject matter could exert. Therefore the sound motion picture has a higher quality of stimulus-response-current, units-of-time, than the printed word.

Most illuminating proof of the value of sound motion pictures was offered in the demonstration held at George Washington University, Washington, D. C., July 7-10, 1931, under the direction of the office of education in the Department of the Interior. Fifty boys and forty-seven girls of grammar school age were sent by the Governor of every state in the union except Washington, to participate in this test. The children were given the Terman Group Test of Mental Ability, examinations; form A.

The range of I.Q's for the boys was 94 to 158, for the girls 87, to 137. The children were first tested in the usual manner on all of the subjects covered by the sound and motion picture film. They were then shown the film. After seeing the pictures, the boys and girls made an average gain of 88 points on all five tests, as a gain of about 19 points on each test. Since there are 50 questions in each test this is a gain of 38 percent.

In the Nation's Schools for May, 1930, Mr. H. D. Kitson of Columbia University presents a long paper on this problem in which the following claims are made for the talking film in schools:

1. It will prove a useful supplement alike to text-book and to teacher.

It will not wholly take the place of either. It can, however, bring the text-book to life, and it can relieve the teacher from the merchandising of information, leaving his energies free for the higher role of guide in the learning process and giving him more time for attention to individual pupils.

2. It will improve the quality of instruction.

At every point where the talking film proves at all usable, it can present instruction by the masters instead of by the mediocre upon which we must all too often lean.

3. It will make possible frequent repetition of materials, where desirable, without consuming the teacher's time for such repetition, and insuring that the repetition shall be exactly the same.

4. It will make possible a widening of the curriculum that might not be possible if teachers had to be hired and expensive equipment bought.

5. It will enable pupils to learn through the eye as well as through the ear—two senses that are not always adequately employed in learning.

6. It will enable us to standardize the content and quality of all instruction that should be standardized throughout a state or nation.

7. It will make possible many economies.

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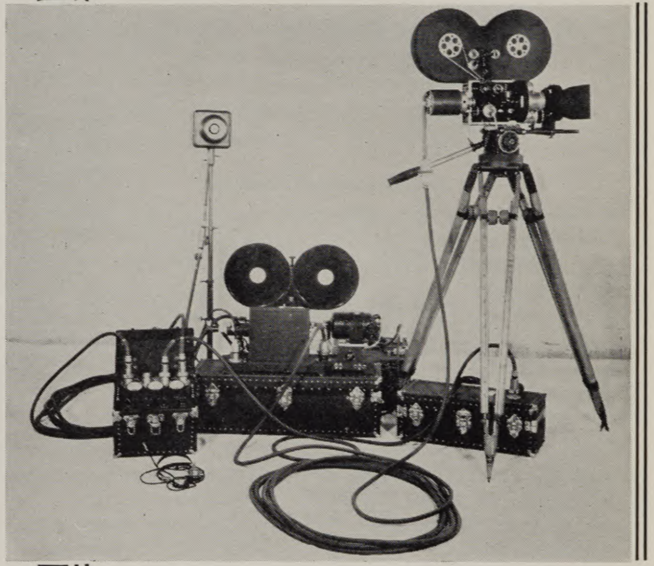

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Amateur Movie Making

by **WILLIAM STULL, A.S.C.**

ONCE the more elementary phases of cinematography—focus, exposure, and camera placement and manipulation—are understood, the most important features are lighting, filtering and composition. These three are features that will receive first consideration in the judging of the purely photographic awards in the American Cinematographer contest, for it will be accepted as almost axiomatic that entrants will be proficient in the more elementary phases of camera work. Therefore, this month we will consider these three important features from the viewpoint of the contestant.

A Little About Lighting

A great deal has been said about lighting, both in this department and in other articles in both the American Cinematographer and the Cinematographic Annuals. Most recently, my good friend, Charles Clarke, A.S.C., has said a great deal that was pertinent about exterior lighting in his recent article on reflectors, as has Jackson Rose, A.S.C., in his article on interior lighting. Therefore, since my space is limited, I can only suggest a few of the basic principles, and refer my readers to these more extensive articles for fuller details.

Most of us will recall from our earliest instructions in photography—usually beginning with a box Brownie or small Kodak—that certain definite rules were arbitrarily laid down. These rules, we found, were, however, purely for the guidance of designers, and were intended to be ignored as soon as the experience and equipment of the photographer permitted. These rules do not apply at all to cinematography, but their cinematic counterparts have one similarity in that they are made to be ignored on occasion.

Perhaps the first rule in the Brownie instruction-book was that one should only take pictures between the hours of 9 A. M. and 3 P. M. For the Brownie-user, especially the novice, this is all right; but not so for the cinematographer, who has at his command fast lenses and supersensitive film. Instead, use your camera early and late—but take plenty of time out for lunch. For in the early part of the morning and the latter part of the afternoon, the sun will be low, giving you pleasing lightings and pictorial shadows, while around noon the sun is so nearly straight overhead that the lighting is unpleasant, and shadows non-existent.

Another rule from the Brownie days was to have the sun behind the photographer. This is still the safest rule for still camera work of the Brownie type, but it does not by any means hold good for cinematography. Instead, its cinematic counterpart is to have the light come from one shoulder or the other. This is technically termed a cross-light. It gives by far the best lighting for all-around exterior work. Striking the subject as it does, from the side, it gives a very pleasing and natural effect, and suggests natural roundness to a considerable degree.

But although a cross-light is good, a back-light is often better. Back-lighting presents a few difficulties to the inexperienced, but it is worth the trouble. Summed up in a few words, all that is necessary is to have the sun behind your actors, have your lens well shielded from the direct light of the sun—either by its own sunshade, an auxiliary sunshade, or by the shadow of some convenient tree or other object. Then expose for your shadows—(use reflectors if you have them)—and there you are. Backlighting is always pictorial, and is especially effective when photographing women, as it makes the most of their hair.

Another pleasing effect—as suggested by Mr. Clarke—is to have your action take place in the shadow of some trees. With the lenses and films now available, normal shadows of this nature need give us no fears as to exposure, and the light-patterns traced by the sunshine that filters down through the leaves can be highly pictorial, especially if reflectors are intelligently used to light and model the faces of the players.

As far as interior lighting goes, the limited space here available prevents me from saying a great deal. Furthermore, the various articles recently published in the American Cinematographer and in the Cinematographic Annuals treat the subject in such detail as to make repetition here superfluous. One important development, however, has occurred since the publication of these articles: this is the introduction of the new 64-volt lamp bulbs. These enable the amateur to convert any ordinary fixture into a 500-Watt lighting unit at the cost of only a few cents for the bulb. This opens up vast new vistas in the field of interior lighting—why not try some of them?

Facts About Filters

One of the most important phases of professional cinematography is the use of color and effect filters. All too often, the amateur does not attempt these effects, or, if he does, confines himself to the use of the simple 2x and 4x filters generally available. This is unfortunate, for without the use of filters one cannot get the fullest value out of panchromatic emulsions. Furthermore, the ordinary yellow filters generally used are of little if any value with Eastman Supersensitive Reversal film, which has embodied in it already approximately the correction of these filters.

There are now available, moreover, several devices which enable the amateur to use the standard professional 2" square glass filters on his camera. The serious amateur should by all means take advantage of these to bring the endless effects of professional filtering to his own films.

The three filters most commonly known to amateurs, due to their extensive use in still photography, are the Wratten "K" series—K-1, K-2, and K-3. For use with regular Panchromatic film, or with Supersensitive negative film, these give a good range of correction. Eastman Supersensitive film, however, embodies the correction of the K-2 already, so a more extensive assortment is naturally indicated.

Working from this basis, the first filter to consider is the K-3. This gives a good, full correction for all around work. It necessitates only a slight increase in exposure.

The next filter to be considered is the G. This is orange in color, and necessitates about the same increase in exposure as the K-3. It is a very useful general purpose filter, and in addition serves to give maximum contrast in flat lights, and makes blue sky photograph grey.

The 21 filter is one which has made tremendous gains in popularity among professional cinematographers since the introduction of supersensitive film. It is very useful as it gives a rather high degree of correction without dealing too unkindly with faces. It is excellent for sunset effects, and to render yellow and orange very light. Its factor for supersensitive film is 4.

For extreme overcorrection we must use the red filters, either the 23 or 25 A or the 29 F. The A filters are used principally to turn blue sky dark grey; the heavier of the two—the 25 A—has a factor of 6 for Supersensitive film. The

(Continued on Page 47)

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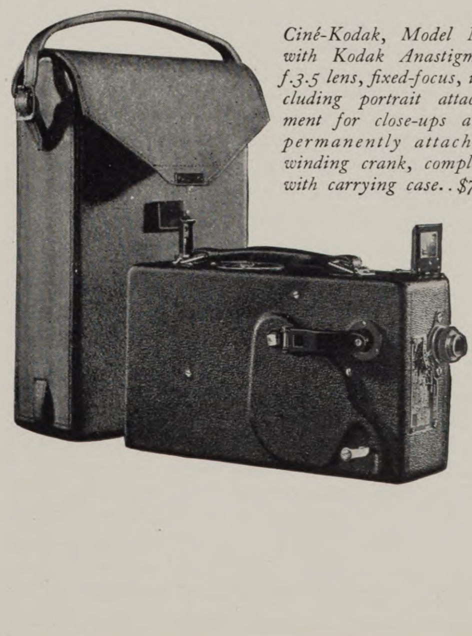
You'll find the Model M dependable. Its sturdy motor is always ready for action. No starting failures. Light and easy to carry. Convenient to hold.

And, like all Ciné-Kodaks, it's simple to load and easy to use. See the $75 Model M at your Ciné-Kodak dealer's. Then you, too, will be enthusiastic! Eastman Kodak Company, Rochester, New York.



Ciné-Kodak, Model M, with Kodak Anastigmat f.3.5 lens, fixed-focus, including portrait attachment for close-ups and permanently attached winding crank, complete with carrying case..$75.

Random Hints for the Cine Amateur

by **KARL A. BARLEBEN, JR., F. R. P. S.**
Cine Editor of American Photography

GIVING advice is one thing, and taking it is another. It is a noticeable fact that the amateur movie maker who heeds advice and warnings turns out creditable—if not perfect—films consistently, while he who neglects knowing his equipment more or less intimately, and is careless in his methods, makes a good picture by luck only, and this very rarely. Which are you? Do you profit by what you read, see, and hear?

One of the best bits of advice that I can give is **study carefully your instruction manual.** In case you did not get such a manual with your camera or projector, be sure to obtain one as soon as possible, then make up your mind to **study** it, don't just read it. If you have just recently purchased a camera, be sure to study the manual in detail **before you expose an inch of film.** I know this sounds cruel, but I'm certain that you will thank me for it later, for this bit of advice will be the means of saving you many disappointments later on. Practice the manipulation of the camera before you thread good film into it. Learn how the lens works, how the film is threaded into the camera, how to hold the camera steadily, how to release the motor button smoothly and easily without jarring the camera. Go over these points time after time until they become second nature to you. Only after this should fresh film be put in the camera and the first **trial** shots made. By means of a notebook, keep data regarding each scene made. In this way you will be able to see your faults on the screen and rectify them in the future. You will not be apt to make the same mistake twice if you follow this advice.

A tripod is a nuisance to most amateurs, nevertheless it forms one of the important accessories in the movie outfit. If you are particularly adept at holding the camera steady in your hands you might get away with it in the majority of cases, and to make certain that you hold the camera firmly, see to it that the elbows are pressed against the side of the body—this gives added rigidity. It is not necessary to clutch the camera closely in the hands, on the contrary, it should be held rather loosely and in a comfortable position. Holding the camera tightly tends to import a slight vibration to the film due to the tensing of the hand muscles. Care should be taken to see that the release button falls naturally and directly under the thumb or forefinger, depending upon the camera and the most comfortable position to the individual. If it becomes necessary to "fish" around for the release button, it is obvious that the camera is bound to move. And "panning"—how often has the amateur been cautioned about this in magazines and books? Yet the average amateur persists in spraying the landscape with the lens—imagining for the moment that the camera lens is a hose, they would indeed water the surrounding area far and wide. The panorama should not be indulged in for inanimate scenes such as landscapes unless it is done **slowly** and methodically. However, when the camera is following a moving object, panoraming must of necessity be indulged in. In this case the object should be kept in the center of the view-finder; in other words, the camera follows it according to its speed. So the advice of "panning" is good or bad, depending upon the nature of the subject being photographed.

Then the lens, how this defenseless bit of glass is abused. In cleaning—and cleaning is necessary from time to time—use Japanese lens cleaning tissue. This is a soft, fibrous material which is easier on glass surfaces than other materials commonly used for this purpose. Silk should be avoided, for despite the fact that it appears to be soft and harmless, it consists of harsh fibres as a rule which scratch minute ridges in the soft lens glass. An old cotton handkerchief makes a second-best material for lens-cleaning, providing it is soft and many-times washed.

A lens-shade or sun-shade makes an important accessory to the lens. The majority of cine camera lenses are equipped with sun-shades when purchased, but in the event that yours does not boast of such an accessory, be certain to make one your self or buy one. A home-made sun-shade is easily made by making a stiff tube from cardboard—a pill box makes an ideal sun-shade as it is, provided it fits the lens snugly—which is later taped tight by means of lantern slide binding tape. The tube should fit the outside of the lens snugly, and painted a dead black inside as well as out. The lantern slide tape is usually a matte black and therefore requires no painting. The tube should be long enough to protect the lens from direct rays of light, yet not so long that the image on the film is vignetted, that is, cut at the corners. A few tests will determine the correct length of the tube, the focal length of the lens being the factor upon which this depends.

A lens-cap, too, is a great saver of the lens. Keep the cap on the lens always when the camera is not in use. It keeps dust and moisture off the delicate glass surface. Be it known that a lens does not work at its highest efficiency when covered with a layer of dust.

Before leaving the subject of lenses, we must mention the value of focussing. By all means take the time to focus accurately, for unless this is done, fuzzy pictures on the projection screen will result. It is all very well to depend upon the hyperfocal distance, but we should not abuse it. After all, the limit of one-thousandths of an inch circle of confusion should be maintained in cine work wherever possible, and when the amateur permits discrepancies to creep in, in the matter of focussing, he will suffer for it on the screen. If the subject being photographed is ten feet away from the camera, set the lens at the ten foot mark—not at five, nor at fifteen. Be accurate. In no other way can successful films be made. There are many whose judgment of distance is not all that it should be. Is there no help for them? Certainly. Range finders or, as they are also called, distance meters, are available which ensure correct focussing. These interesting little devices are based on the "principle of coincidence" whereby two images are fused into one, and serve as an accurate means of measuring distances. Various styles are available ranging from $7.50 to $17.00 in price.

Exposure, like focussing, comes in for its share of abuse with the average cine amateur. Particularly where reversal film is used, should the exposure be as near correct as possible. Here again the "know-it-all" amateur might suggest that the latitude of the emulsion will take care of any slight errors in exposure. This is true, but like in focussing, why abuse it? It is exercised enough under normal conditions without purposely being careless. The aim should be to expose as accurately as possible—and even then there will be enough work for the latitude to do. Here again many amateurs will be at a loss to know how to ascertain the right exposure. The answer is in the use of an exposure meter. Several excellent makes are available and no amateur's outfit can be said to be complete without one. Before anyone begins to ridicule the use of a meter to measure light for photographic exposure, let me here remind him that the light that we see by is not entirely the same light that we photograph by. We therefore find that judgment alone is not always reliable.

(Continued on Page 38)

Glow-lamp Recording

(Continued from Page 14)

the rectifier tube output and the grid of the control tube. The period of this timing depends upon the values of the tuned filter circuit, and is usually between one-fiftieth of a second, and one-hundredth of a second, which permits the control tube to function only in relationship to the envelope of the speech current.

Variation in Circuits Used

There are many variations in the type of biasing circuit to be used, and just so that they contain the three essential units, i.e. rectifier, filter timer, and control tube, properly adjusted, the results will not vary. Fig. 5 shows the circuit that has been simplified by the introduction of a full wave contact rectifier in place of the thermionic rectifier. In addition, in place of the control tube being in series with the glow lamp, it is shunted across the resistor, supplying the d.c. current to the glow lamp, and provides an absorption control in place of series. One advantage of this method is that saturation may be properly controlled. Saturation is a double safeguard against overrunning the film limiting characteristic.

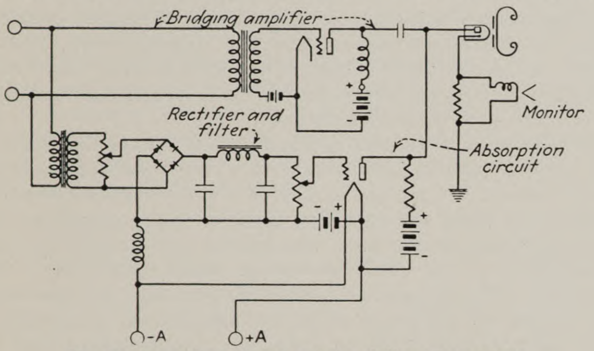


Fig. 5—Simplified circuit using a full wave contact rectifier in place of thermionic rectifier

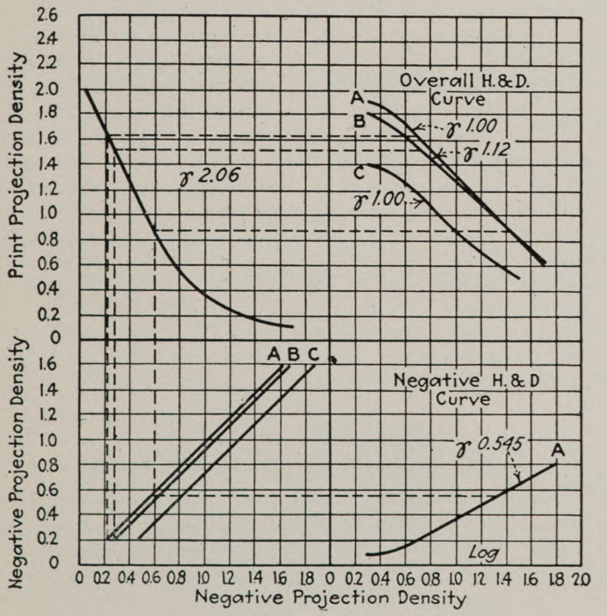


Fig. 6.

Fig. 6 represents film characteristics when employing straight line recording and processing. It will be noted that the negative characteristic is such that the optimum unmodulated transmission for full modulation is approximately 20 per cent. This value inherently gives this type of processing a reduction of 6 db. in ground noise over normal toe processing due to the

(Continued on Page 40)

Professional Effects

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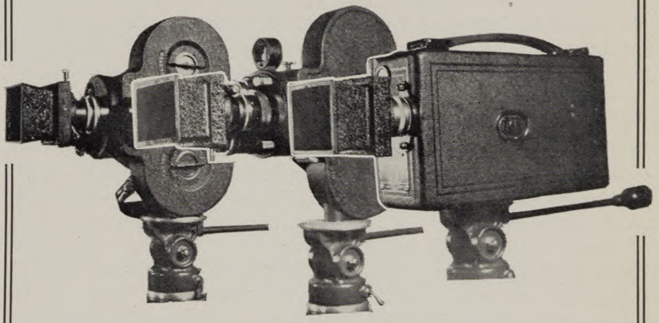
H. M. S.

COMBINED

SUNSHADE, MATTE BOX
and **FILTER HOLDER**



and **HARRISON**
H. M. S.
FILTER SETS

Professional Quality 2″ Square Color and Effect Filters

◆

Much of the beauty of professional films is due to the use of special color and effect filters which, although commercially available, could not be used with 16 mm. cameras for want of a proper filter-holder. The H. M. S. matte box takes the standard professional two inch square glass filters. These provide not only the more familiar color-correction of the well known "K-series" of yellow filters, but also a wide variety of special effects, such as moonlight and night effects, fog effects, diffusion, and light and dark iris effects that have hitherto been impossible for the amateur cinematographer. The H. M. S. matte box is designed to take two of these filters simultaneously, permitting many combinations of color-correction and diffusion, color-correction and special effects, etc.

The H. M. S. matte box will fit any standard 16 mm. camera. It is mounted directly on the lens, and held in place with set-screws and special fittings, so that while in use it is rigidly in place, but instantly detachable. It can likewise be fitted to a number of semi-professional 35 mm. cameras, such as the Eyemo, de Vry, etc., and to still cameras whose lenses do not exceed 1½ inches in diameter. **It is important, in ordering, to inform us as to the camera, lens-equipment, and lens-mounts with which the matte box is to be used. Price $7.50.** A small extra charge is made in cases where the matte box is to be used with more than one lens, or where it is to be fitted to 35 mm. or still cameras or special lenses.

HOME MOVIE SCENARIOS, INC.
1220 Guaranty Building Hollywood, California

Random Hints for Amateurs

(Continued from Page 36)

It is well to keep in mind the fact that artistic movies cannot be created until a certain degree of technical excellence has been acquired. One cannot very well make a good picture unless he knows how. These technicalities should be absorbed until they become second nature—then the mind will be free to concentrate on the pictorial and artistic side of the question. An artist may have the most wonderful ideas for paintings, but unless he is skilled in the handling of his paints and brushes he cannot interpret his ideas on canvas. In a similar manner, the amateur cinematographer must develop his skill with the camera before he is able to turn out works of his creations.

Everyone interested in making movies seems to like to make tricks. This is all well and good, but it must be remembered that clear, crisp photography is more important than tricks. As a matter of fact trickery is, in these modern times, indulged in **only where it serves some good and useful purpose.** Trickery for the sake of mystifying the audience is no longer done, for the smallest child sees through the deception easily these days, unless the trick is good, and furthermore, the complicated tricks seen on the theatre screens are made, not in the camera as most everyone supposes, but in an optical printer. Most of these tricks would be impossible to make in a camera! However, simple tricks such as reverse motion, stop motion, and a fade are really very easy in the amateur camera, but the amateur must be warned that if he does go in for this work, he must not over-do it. It is so easy to bore an audience, even of close friends, with too much trickery. It is like too much sugar in the coffee. In general the amateur will do well to resort to a trick or two only now and then, and when one is used, it should have a direct bearing on the story or subject of the picture.

Here is a matter that most cine amateurs forget. **Make each scene mean something.** Don't take a bit of film on a subject unless you mean to bring out some idea of thought. Each reel should have unity; don't string a bunch of scenes together and expect your audience to enjoy it. Figure out for yourself just how this works out. In planning a story, a photoplay in other words, you would have a definite objective in view, a story to tell the audience in picture form. You would not think of stringing the scenes together regardless of their sequence; then why do it in any film? Yet this is exactly what too many amateurs do, and later wonder why their friends don't show any particular interest in their films. Every scene, regardless of its subject material, should present some idea. Where a number of scenes are included, they should have a bearing upon each other, and lead up to a logical ending. You will be surprised at the improvement in your films if you will just stop to ask yourself; "Why am I taking this scene?" "Does it mean anything?" "How will this scene appear on the screen?"

Editing—a fascinating indoor sport that not every amateur enjoys. By means of editing, a poor picture can often be turned into a good one. Editing is the cutting out of poor scenes, bad portions, inserting titles, etc. No film should be shown to an audience until after it has been carefully edited and titled, for the difference is amazing between the edited and unedited film. Make this test, just for the fun of it, and convince yourself of this fact. Editing requires only a few simple tools—a rewinder, a bottle of fresh cement, a few extra metal reels, and—some common sense. The cement should be fresh as stated, for old cement is worse than useless. In order to preserve cement, be sure to keep the stopper tightly corked in the bottle when not in actual use, for when cement is exposed to air it loses its power rapidly and evaporates, later becoming thick and "soupy," after which it will not hold, and a poor splice is worse than none for it can actually cause damage to much of the film during projection.

Many amateurs make their own titles and get a great kick from doing so, while others send their titles out to be in a laboratory. The home-made title is naturally the best, for the amateur takes greater pride in it because it is some of his own work. Various titling outfits are to be had, or the amateur can make up his own outfit from various odds and ends in the house. Artificial light is most satisfactory, for it can be depended upon time after time to be of the same intensity, which cannot be said of sunlight. And while the regular reversal film may be used for titles, positive film is suggested because it gives more snappy and contrasty results—which is just what is needed in this work. Besides, positive is cheaper to buy, and short strips can be developed at home in much the same manner that a roll film from the family Kodak would be developed. Positive film may be purchased on spools or it may be had in bulk, in which case the amateur will have to wind his film on some spare camera spools in his darkroom—if he has one. In either case, positive film will result in more satisfaction. To make direct titles, black letters on a white field should be used, and where a negative is desired, white letters on a black field should be the rule.

Projection is often said to be the final link in the chain of the motion picture, and it is. It is the final step, and its importance to the picture in general cannot be over-estimated. Keeping in mind the fact that poor or faulty projection can ruin the finest photography, the amateur will at once see how necessary it is to know something about this work. The projector, like the camera, should be studied. A clear, pure white light should result when the light switch is turned on. Any dark corners, rings or spots, or various colored sections mean that the bulb in the lamp house is not accurately adjusted. Don't ever project a film with a projector in this condition. Keep the condensers and objective—lens—clean, and always have a spare lamp on hand in the event that the old one burns out suddenly—it usually does this at the most unexpected times, —during the middle of an interesting reel as a rule. A better plan still is to watch the lamp and discard it when it begins to show signs of blackening, and the filaments appear considerably sagged. The average lamp should stand up for about one hundred hours—some go more, some less—barring accidents and careless handling. Focus the projection lens to the best of your ability, for a fuzzy picture on the screen is nothing to be proud of. Keep the screen clean and dirt-free. Do not try for too large screen areas, for while huge proportions are possible with some projectors, this practice is not the best for the average home entertainment. A small area, say four by five feet or thereabouts is more to be desired than a seven by nine foot screen image. The small screen will in all cases be brighter, sharper, and clearer, while the larger the screen becomes, the dimmer, more hazy, and indistinct the pictures will be. Then, too, with a small screen, the audience will be enabled to sit nearer to it. Various focal length lenses may be had for the majority of projectors, but the average amateur will not be apt to have need of more than the regular lens already on his projector.

There are many things to be learnt by every amateur concerning amateur movies—that's what makes it such a delightful hobby.

◆

S. O. S. Buys Amplitone Stock

THE entire stock, plant, and fixtures of the Royal Amplitone Corp., 109 W. 64th St., New York, has been bought by the S.O.S. Corp. of 1600 Broadway, New York, according to announcement of the S.O.S. Corporation.

At one time, the Royal Amplitone Corp. was considered among the leaders of the Independent Sound Field, thousands of their Disc and Films Systems having been sold throughout the world. Among their larger users was the Publix Theatres Corp., while many other circuits had adopted the Royal Sound Systems in the early days of the Talkies.

Users of Royal Amplitone Equipment are informed that a complete stock of parts and replacements is being carried by the S.O.S. Corp., and will be available as long as there is any demand.

Supersensitive Kodacolor Film Announced By Eastman Company

ALL users of 16 millimeter film will be interested in the announcement just made by the Eastman Kodak Company of a new Super-sensitive Kodacolor film. This new film has a greatly increased latitude and a range beyond the "direct sunlight" scope of the old Kodacolor.

In other words, the film is twice as fast as the old film and makes possible the making of pictures in color on cloudy and dull days and in the shade. Bright sunlight is no longer necessary to capture the beauties of nature's colors. The new film produces even richer, more vivid and more pleasing rendition of colors than ever before, and with only fair lighting. For the traveler this should be a real source of delight, for it means that he need not miss beautiful shots in color just because the day happens to be cloudy or dull as he is passing by the beauty spots which he probably will never visit again. The following exposure guide has been issued by the Eastman Company for use with the new film:

Light Classification	Exposure	Camera Speed
Dull or in Open Shade	No N. D. Filter	Half
Slightly Cloudy	No N. D. Filter	Normal
Direct Sunlight	N. D. 1	Normal
Intensely Bright	N. D. 2	Normal

Early or late in day, increase exposure by changing N. D. Filter or decreasing camera speed.

Dull—Sky completely overcast, but good light. Do not confuse with **Very Dull.**

Open Shade—Subject lighted by large area of sky.

Slightly Cloudy—Sun just obscured, no distinct shadows cast. Also for clear days when only part of subject is in sunlight.

Direct Sunlight—Full sunlight, distinct shadows cast.

Intensely Bright—Unusually brilliant sunlight, without large shaded areas.

The new film requires a different ratio cap than has been used in the past, and this will be included with the film.

◆

New Sound Head

FRANKLIN Hansen has been appointed head of Paramount sound department, replacing Wilmore Harkess, who resigned. Harry Reynolds steps into the spot vacated by C. E. Browne as chief of prop department.

New Filmo Single Control Projector

ANNOUNCED for April delivery is a new Filmo projector, the Model M, selling at a price lower by far than that of any previous Bell & Howell projector.

Despite the low price, the Model M is asserted by the manufacturers to be a quality machine built, like other Filmo models, for years of service, and projecting brilliant, steady, flickerless pictures.

It is a single control projector, and simplicity of operation is a prime feature. Say the makers: "Just thread the film and press the single switch. Movies form upon the screen. A turn of the lens brings the pictures into sharp focus. There are no non-essential controls to confuse the least experienced user."

The mechanism and the optical system are essentially the same as those used and proved for nine years in other Filmo models. In appearance it closely resembles the Filmo 57 projectors. Brilliant illumination, even upon a large screen for audiences running into the hundreds, is provided by the newly developed 300-watt, 110-volt projection lamp.

The Model M is mounted upon a broad, secure, aluminum base, which forms the bottom of the carrying case. The neat, sturdy, black fabric leather covered case is set down over the fully erected projector and clamped to the base. There are compartments in the case for films, reels, and projector accessories.

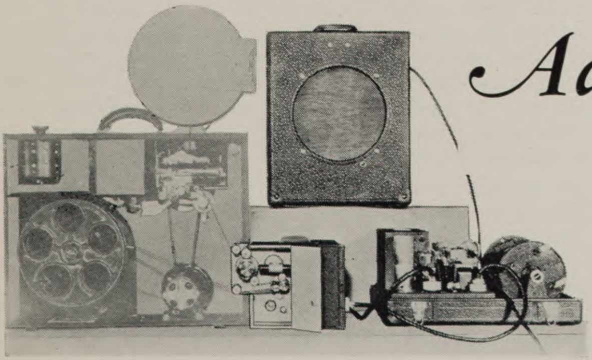
Film is rewound rapidly by a 2¼ to 1 geared rewind. Large sprockets, plus the highly perfected and precise film movement mechanism, insure the film against damage. Framing is automatic. The lens is instantly interchangeable. A tilting screw facilitates centering the picture on the screen. The projector is adaptable to Kodacolor (under Eastman license).

The Model M has the standard Bell & Howell single tooth shuttle movement. The same projector may be had with a double tooth movement, and when so equipped is known as Model N. The price of both models is the same.

◆

New Travelogue Firm

CONTINENTAL Films, just organized by Tom White, has opened a studio and offices at 1611 Cosmos St., Hollywood, and plans to produce a new type of long and short travel pictures. White, formerly with Paramount and who recently directed the Huntington Expedition, has stationed cameramen in remote parts of the globe with instructions to shoot only material that has human interest value.



The Syncrofilm Portable Sound Head
The low cost will surprise you

Add Perfect Sound

to your favorite 35 mm. Portable Projector. No need to scrap good portable projectors. "SYNCROFILM" sound heads are now made to operate with any or all makes of standard portable 35 mm. projectors.

No changes necessary to projector mechanism. Easy to set up and operate. Smooth running drive insures true reproduction without waver or distortion. Highest grade materials and workmanship insures dependability and long service.

Manufactured by

WEBER MACHINE CORPORATION
59 Rutter St., Rochester, N. Y.

New Eclair Sound Camera

A REMARKABLE new sound camera has just been developed by the well known French cine-engineer, M. Mery, whose earlier Eclair cameras have long been familiar to cinematographers on both sides of the Atlantic. The new model, according to descriptions by A. P. Richard, writing in our French contemporary, "La Cinematographie Francaise," and to letters written us by M. Georges Benoit, A.S.C., who has inspected the camera, combines many radically new and valuable features for studio and independent recording with that desideratum of engineers, recordists and cinematographers everywhere: absolute silence. According to M. Benoit, the camera does not require any sort of covering, either blimp or bag. It can, in fact be used, uncovered, only twenty inches from the microphone.

Two features are immediately noticeable: that, for the first time in the history of the Eclair line, the familiar inside magazines have given place to outside magazines, and that the camera is double, using two films and two movements, one for the picture and one for the record. Aside from these two innovations, the new model retains the majority of the familiar Eclair features. Since the internal magazines have been eliminated, however, the actual size of the camera-head is somewhat reduced; therefore, the six-lens turret, which characterized the previous models, has been changed to a smaller four-lens one, and the double focusing mechanism, which allowed the operator to focus either on a ground glass or on the film, has been dispensed with in favor of a prismatic magnifying tube allowing focusing on the film.

The 1000 ft. magazines are of the individual-retort type, avoiding the extra bulk of the double-block type more conventionally used in this country. Accordingly, but one empty retort need be carried for each film-system. Expanding spools are used in the magazines to facilitate the manipulation of the 1000 ft. rolls.

The movement is placed in the middle of the case, between the sound and picture heads. It is operated by a 1/10 H.P. triphase, synchronous motor, which is noiseless. The motor may be reversed, stopped or started by a switch at the rear of the camera.

The film movement differs considerably from the earlier models. Due to the use of the outside magazines, the threading is considerably more simple, and is similar to that of conventional American studio cameras. The pilot-pins and intermittent pressure-plate of the earlier models have been abandoned in favor of a roller-type, fixed pressure-plate and a claw acting on but one side of the film; the opposite side of the film moves against a spring pressure-bar which holds the film absolutely centered on the proper axis.

Focusing is done directly on the film, through a prismatic magnifying tube. The focusing-scale is, as usual with Eclair cameras, a polygonal bar visible through a slot at the rear of the case, and in this model is decagonal, allowing ten different lenses to be calibrated on the one scale. Just above the camera door is a small lever which not only indicates whether or not the prisms are in position for focusing, but also prevents the camera from being operated when in focusing position.

The camera is equipped with a dissolver, which allows fades of any length to be made either automatically or by hand.

The sound head is extremely simple. It is contained in the right-hand side of the camera, utilizing separate magazines and glow-lamp recording. The film is fed down from the magazine over a large main sprocket, upon which it is held by two rollers. While passing over this main sprocket, the film passes under a microscope which focuses upon it the image of a slit illuminated by the recording glow-lamp. Synchronism is positive since the sound and picture main sprockets are mounted on the same shaft.

Glow-lamp Recording

(Continued from Page 37)

halving of the unmodulated transmission. It will be further noted that it is possible to increase the print density to values as low as 4 per cent and 5 per cent.

In order to fully understand the effect of noise reduction in relationship to toe and straight line processing, reference is made to Fig. 7. In this the density of the unmodulated sound track is plotted against relative noise reduction. It will be noted that in the upper regions of transmission, noise reduction is not linear with decrease of transmission, curving off at a point approximately 65 per cent. As this value falls in the fog region it is of little importance. The amount of noise reduction is based on the ratio between maximum signal unmodulated track and minimum signal unmodulated track. In the case of toe recording, normally this is the ratio of 40 per cent X′ to 20 per cent X″, or theoretically 6 db. reduction.

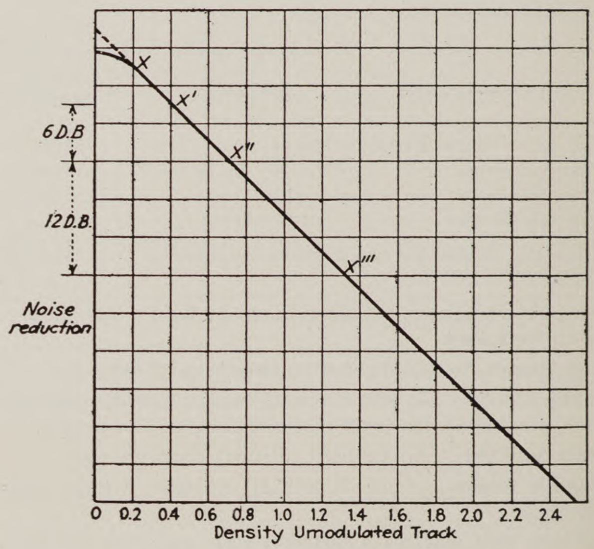


Fig. 7—Density of the unmodulated sound track plotted against relative noise reduction

In the case of the straight line print, it will be the ratio of 20 per cent X″ to 5 per cent X‴, or approximately 12 db. It will be found in practice, however, that the actual observed reduction is not quite as great. While the modulation value of toe recording is inherently higher, the net reduction of surface noise and signal-to-noise ratio is greater when using straight line methods.

It is the contention of the author that the reduction of surface noise is not the advantage to be gained by biasing methods, but rather it is the increase in range between signal and noise. At the present time the average auditorium background noise, which consists of audience movement, ventilation, etc., is approximately—15 db. Any reduction of film surface noise below this value will be wasted, it should, however, be applied to the other end of the volume spectrum.

In the average theatre, having a capacity of approximately 2,000 seats, +20 db. level into the horns is sufficient to create the illusion of a large orchestra, and +30 db. is sufficient to create a natural illusion of gunfire. It is, therefore, desirable that the maximum range of 45 db. between surface noise and peak signal be attained. This is greater than is at the present time attainable with the existing systems. It is believed, however, that with the adoption of methods producing sound tracks similar to the ideal, as represented in Fig. 1, that ranges of 60 db. on the film will be possible.

Printed through courtesy of "Electronics"

The Sound Film Editor

H. J. McCORD, chief film editor at Warner Brothers-First National Studios, brought out some interesting phases in the field of film editing at a recent meeting of the Technicians branch of the Academy of Motion Picture Arts and Sciences. In part he said:

"The film editor, in order to successfully cut or edit a sound motion picture, must have a background of intelligence which enables him to know the best dramatic, comedy, melodramatic or farce tempo of the scene,—slow tempo may make the scene draggy and uninteresting, while some other tempo may on the contrary be too racy or fast, by reason of which the characters on the screen tell their story too quickly and interest is lost.

"When a picture is too slow in unfolding its theme or story, the film editor is required to use all of his intelligence to eliminate the slow portions and speed up the action. He must at the same time keep in mind the fact that the story should be tangible and easy to understand after these eliminations have been made.

"Practically the same thing applies to a story which is too fast. The cutter must, by adding other film between dialog scenes, slow down the tempo of the entire sequence.

"The use of dialog during dramatic scenes is of utmost importance to the finished picture. When a dramatic scene is in progress it is oftentimes best to have the dialog of the character delivering the speech come over the scene of those who are listening to it, so as to get their reaction to what is being said. At other times, it is more dramatic to stay with the person who is speaking, because much of the drama and force may be lost if the facial expressions and tone of the voice is not seen and heard at the same time. The same technique is oftentimes used in comedy as well as in drama.

"The film editor can do practically the same tricks with his film and dialog as he did in the days of silent pictures with titles. For example—if the scene he is working on has a great amount of dialog and eliminations have to be made because this dialog repeats itself, or is too cluttered up with words, he can, if he has the necessary film, (closeups, medium shots, long shots, etc.) move this film and dialog around in such a way as to cut out speeches or have speeches originally intended for the latter part of this scene appear in the opening of the scene and vice versa.

"Many times, the cutter is in difficulties, when cutting from one scene to another in dialog, especially when the dialog is spoken rapidly, as he has to cut on a syllable in one scene and in the next scene he cuts on another syllable. Of course this is taken care of somewhat when the picture goes through the process of dubbing and unwanted words are painted out of the sound track.

"Another thing left up to the intelligence of the cutter, is the matter of cutting into scenes, extra dialog, or wild dialog which was not recorded at the time the picture was photographed. In other words, some dialog is eliminated at times, because certain words do not register well or are not audible; while in other instances extra words are required. This wild dialog may be recorded a week later, and the cutter has to cut this into the scene as originally made with sound and picture, and match the lip movement as closely as possible, or he may use a part of another character's close-up and allow a certain portion of this new dialog to ride through it, giving a perfect illusion, as though this was originally synchronized with the picture.

"Many times a star's voice is not suitable for singing, so a wild recording is made using a professional singer while the star merely mouths the words of the song in the picture. A clever film editor, by the use of appropriate angles, can match this wild recording almost perfectly, so that the audience is unaware that the singing is done by any other than the star."

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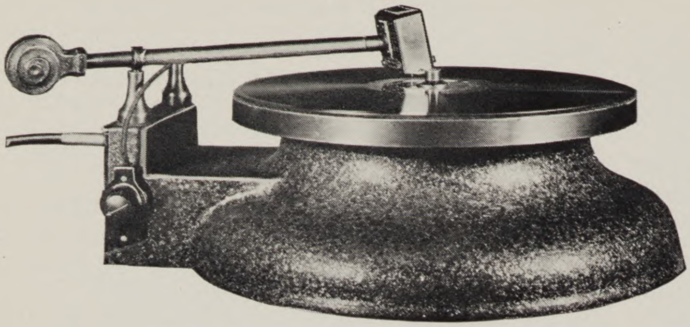

ANOTHER

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Offers a Model B Cine Voice, Home Movie Talking Picture Machine, complete with carrying case, priced at $129.00, to be given to that person or Amateur Club, located in California, who enters the best 16 mm. or 9½ mm. picture from California, regardless of whether the picture wins a cash prize or not. In other words, the prize goes to California's best entry. This home talkie equipment may be attached to all projectors, either 16 mm. or 35 mm. It makes any projector a talking picture machine. It is positive drive, and cannot get out of synchronization. It plays all types of sound-on-disc motion pictures, or it will play any phonograph record with your own silent pictures. Cine Voice is designed to use your radio amplifier and speaker Simply plug in on radio when ready to operate.

◆

OTHER EQUIPMENT PRIZES

The BELL & HOWELL COMPANY will also present two equipment prizes—First, a choice of a Filmo 70DA Camera, listed at $280.00, or a Filmo Model J. L. Projector, listed at $298.00. Second, a choice of any Standard Cooke Telephoto Lens, priced from $60.00 to $95.00. To be given to prize winners who made their pictures with a Filmo. The EASTMAN KODAK CO. will present a Model K Cine Kodak, with a f.1.9 lens, complete with carrying case, priced at $150.00, for the finest example of photography in an out-of-doors picture regardless of whether it wins a cash prize or not and without consideration of story subject. MAX FACTOR MAKE-UP STUDIOS will present one of the famous Max Factor Make-Up Kits, completely equipped, to the winner of first prize of $500.00.

◆

THE CASH PRIZES ARE

First Prize, $500.00 **Second Prize, $250.00**
Third Prize, $150.00 **Fourth Prize, $100.00**

YOUR OPPORTUNITY!

The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. ¶ A total of **$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry. (See opposite page for additional equipment prizes)

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of $500.00 for what its judges consider the best 16 millimeter picture submitted in this contest. $250.00 will be given as second prize; $150.00 as third prize; and $100.00 as fourth prize, a total of $1000.00 in prizes.

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9½ millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

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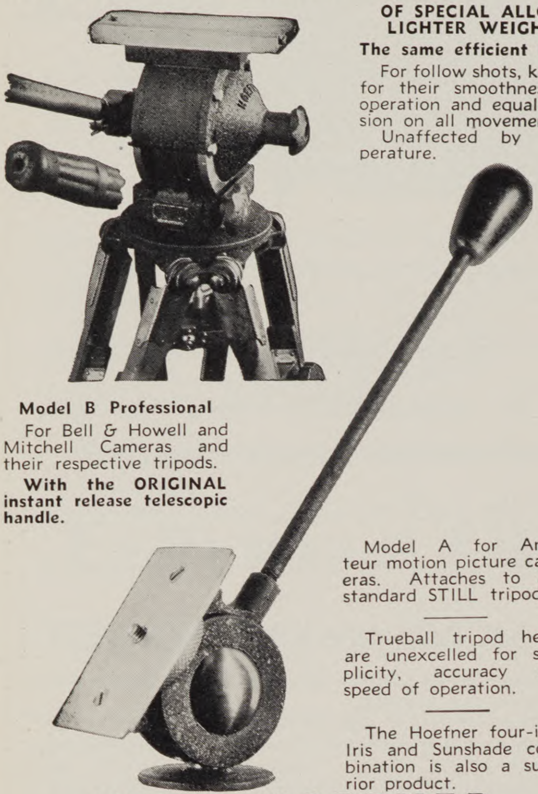

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Television Invention Reported in London

A NEW television invention that may have far-reaching results has been revealed in London to film trade papers. The new invention seems to overcome the great difficulty of getting enough light at the receiving end of the apparatus to illuminate a large area, such as a cinema screen.

The new apparatus consists of a specially designed projector, projecting film at the normal rate of speed. In conjunction with this projector is a television receiving apparatus. Each complete "scanning" of the image is photographed on the film, which is developed and fixed at once on the same machine somewhat on the "Photomaton" principle. By a simple adjustment in the circuit of the television receiver, the photograph will be a "positive," this doing away with the need of printing.

The received film is shown in the ordinary way, and can be used to project almost instantaneously details of current events, such as boxing matches, etc. The sound may also be received by a parallel channel, and photographed on to the film for reproduction simultaneously.

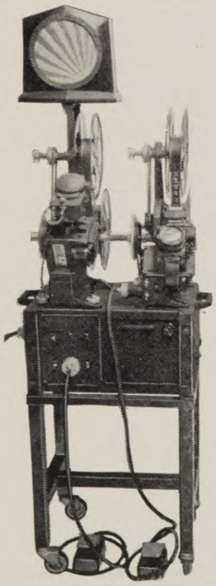
One advantage of the method over direct television is, that the film constitutes a permanent record, and can be used again.

◆

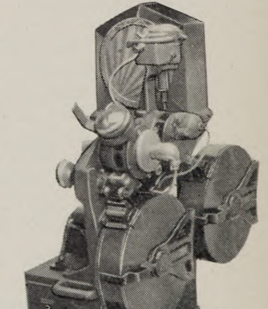
Electric Motor-Drive For the Eyemo

AN ELECTRIC motor unit has just been developed for the Eyemo camera by the Hollywood branch of the Bell & Howell Company. The motor is attached to the camera, and drives it through the regular hand-crank shaft. The built-in governor of the camera is used to regulate the speed throughout the wide range now available on these cameras. The motor will run the full 100 foot roll held by the Eyemo through without stopping. Power is from batteries, either 12-volt or 110-volt direct current being used. The motor is very light, sufficiently so that the camera may still be used in the hand or from a light tripod.

Equipped with this new accessory, the Eyemo should prove doubly useful to newsreel and commercial cinematographers, explorers and aviators. Perhaps its most important function will be its ability to drive the camera at the standard sound-film taking-speed of 24 frames per second, making scenes up to 100 feet in length, for aerial use, and for use in commercial, industrial, news and travel films intended to be used with dubbed-in sound, for the motor-drive robs the camera of none of its well-known portability.



MOVIOLA FILM EDITING EQUIPMENT



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New Lens For Leica

NEWS of interest to the cinematographer, both amateur and professional, is the announcement by E. Leitz, Inc., New York, of the recent perfection of a new ultra-speed lens for the Leica camera with an aperture of f/1.9, and a focal length of 73 mm. This lens is called the "Hektor." With this newest addition to his battery of lenses, the cameraman will be even better equipped than ever to run his test shots, and with a lens of speed equal or approximate to the fastest on his turret.

It is amazing how quickly this unique little camera "took" in the studios, once someone discovered its usefulness. The Leica achieved its original popularity among the amateur "still" workers, but it was soon discovered that its ability to use standard cine film of short lengths, and its precision construction and fine optical equipment fitted it perfectly to solve the problem of test shots on location or in the studio.

The Model "C" Leica, with its interchangeable lens feature, and its highly corrected lenses of various focal lengths and speeds, seems to have become an integral part of many cameraman's outfits. Jackson J. Rose, over on the Universal lot, is rarely seen without his Leica, equipped with the lens shade and filter holder of his own design.

There are a number of features of this outfit that explain its popularity among movie men. It can be loaded with the same kind of cine film the cinematographer plans to use for his picture, and lenses are available in focal lengths corresponding to those on the regular outfit. With the filter holder referred to the regular two-inch filter can be used, or two together in combination or in conjunction with gauze mats. Another thing, when the Leica focal plane shutter is set at the one-fortieth second notch the cameraman has almost exactly the standard sound camera exposure.

One of the strongest points of all about the outfit is the exceedingly compact and efficient film tank for developing strips of cine film up to about six feet in length. This tank is just about five or six inches in diameter and four inches high—small enough to be stuck in almost anywhere when out on location, and once it is loaded in a changing bag, all the subsequent operations of developing, washing and fixing can be carried out in daylight. Regular laboratory formula developer can be used, and thus the operator has a thoroughly practical means of testing his set-up, from film to fixer.

The negatives made by the Leica are just twice the size of the regular single frame, lengthwise, and the regular 24 mm. in width. This size is large enough so that a contact print on positive film can be viewed without too much eyestrain, and makes an excellent sample to hand to the director.

Enlargements made with the Leitz enlarger produce excellent paper stills. Due to the highly corrected lenses used on the Leica, paper enlargements to 11 x 14 inches are not at all unusual, and some have been made as large as two by three feet. Seven out of the pictorial section of this year's "CINEMATOGRAPHIC ANNUAL" were Leica pictures.

Any information desired on the Leica camera is gladly provided by E. Leitz, Inc., 60 East Tenth Street, New York City, or by Spindler and Sauppe, San Francisco, the West Coast representatives.

◆

New Color Background

NATALIE M. Kalmus, color director of Technicolor Motion Picture Corp., is using a new line of colors on her chart for the coming Warner-First National picture, "Doctor X." Dull, mysterious, spooky colors will be used to give an effective background to this mystery thriller. Much interest is directed toward the picture because it is the first story of its type ever filmed in Technicolor.

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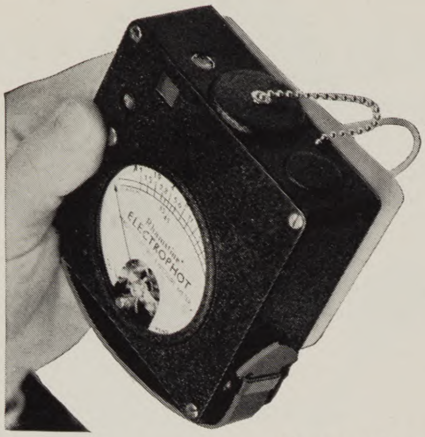

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CONTINENTAL NEWS REEL
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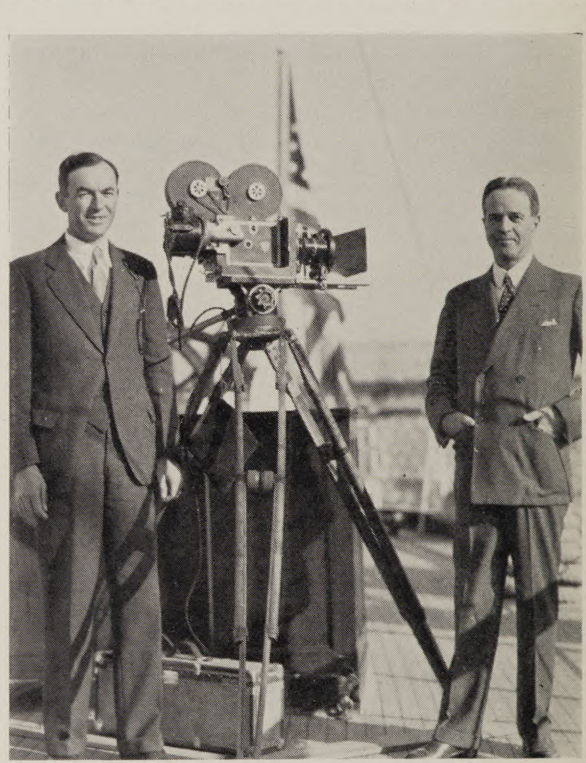
Around the Globe

(Continued from Page 17)

walls with the moat between, watched over by a grim old castle which crowns a rocky hill at one end of the old town. The buildings and streets have been altered but little. Wandering around the quaint old streets or looking down on the old town from the castle one could easily imagine himself to be living in the period of six centuries ago. We found two favorite inns; one the Bratwurstglocklein, a tiny little place, which has been leaning against the side wall of a chapel since it was built in 1313. It was frequented by Albrecht Durer and Hans Sachs in their day. It is famous for its sausages and generous steins. The other inn we liked to visit is a large place in the basement of a three story building built in 1498 and used ever since as a hotel and eating place. My advice to anyone who may be traveling in southern Germany is not to miss Nuremberg.

In Berlin we had good weather, a good deal of sunshine and not too cold even though it was January. One day I called at the "Ufa" office, made myself known and said I should like to be permitted to visit their studio. I was introduced to Mr. Heymann who took me out to the plant, a thirty minute train ride from town. He escorted me through the whole studio, not hurriedly but allowed me plenty of time to watch them rehearse and shoot scenes on the various sets. I could not help but be impressed by how much care and time was spent on each scene more than is usual in an American Studio. I met Carl Hoffman, Ufa's best known cameraman. Unfortunately he cannot speak English and I cannot speak German. At least I could enjoy watching him work. I saw two of his pictures while in Europe; "Yorck" and "Congress Dances," both, in my opinion, very good pictures and finely photographed. On the sets they have a greater assortment of inkie and arc lights than is ever customary here and to my surprise they use far more light than is customary here.



Mr. Gilks and Commodore Vanderbilt

I could not help but notice the different attitude toward visitors in the German studios as compared to ours. They welcome you with open arms and you do not have to show a pass at every corner; a really friendly spirit.

(Continued on Page 48)

Amateur Movie Making

(Continued from Page 34)

F filter has a factor of 12, and turns blue sky almost black. All of these red filters are excellent for getting extreme overcorrected effects of cloudscapes, and for making night effect scenes by daylight, but they must be used with great caution in landscapes due to the extreme overcorrection they give.

The 56 B filter is a green one, which makes foliage appear very light. It is an excellent, soft filter for landscapes. The filter factor of the B is 8. Used in conjunction with the 25 A it is useful for extreme night effects.

Due to the nature of the reversal process, the best results with any color filter will always follow upon a slight degree of underexposure. In using negative film, however, a slight overexposure is advisable when using the G, 21, A and F.

A far more detailed discussion of filtering will be found in the article "Making Tests With a Small Camera," by Jackson Rose, A.S.C., in the latest Cinematographic Annual, while an intensely valuable treatise on the practical aspects of filter factors and exposures was written by Emery Huse, A.S.C., and Gordon Chambers in the December, 1931, issue of the American Cinematographer.

In addition to color filters, there are also the relatively new neutral density filers, which are valuable for softening harsh contrasts, and several varieties of diffusing filters, for producing soft-focus effects, and fog filters for creating hazy and foggy effects. The range of pictorial effects possible through combinations of color, neutral density, diffusion and fog filters are endless, and can only be learned through experiment—which is, by the way, far more interesting than learning through a printed description such as this. No definite rules can be given for the use of filters, not only because their use depends so much upon subject and lighting conditions, but because each cinematographer will have his own ideas as to what degree of correction is preferable. This difference of opinion is well illustrated by an experience of the writer's. One day last week, when Hollywood was favored with some unusually photogenic clouds, I made a series of test scenes with a newly marketed line of filters. Subsequently, I showed the reel to several cinematographers and laymen: no two of them preferred the same filtering!

The subject of composition might be likened to an ocean, for if one wishes to plumb its greatest depths, he would find it all but unfathomable, while at its edges it need not overwhelm the understanding of the merest novice. Fortunately, space does not permit me to attempt to go deeply into the subject here; fortunately, I say, because too frequently when one attempts to do so he finds himself making pictures in a purely mechanical way rather than spontaneously. To my mind, the best definition of composition is that given, years ago, by Edward Steichen, who said, "Simply make your pictures easy to look at!"

The simplest way to do this is to remember that, in looking at a picture, the human eye begins at the lower left-hand corner of the field, and travels diagonally upward. Therefore, take advantage of this in planning each scene. If you find that your principal object of interest does not lie along this path, you can use some small object, strategically placed, to direct the eye to it. It need not be obvious: it may be merely a twig, a stump, or a shadow; it may be a splash of light, a mountain, or a man. But the important thing is to determine where the eye is to go, and then to lead it unostentatiously thither. One of the best articles on cinematic composition was that written by Daniel B. Clark, A.S.C., for the first edition of the Cinematographic Annual. And I can sum up the question no better than by quoting Mr. Clark's phrase: "Art is not **what** you photograph, but **how** you do it!"

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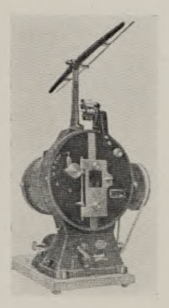

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Around the Globe

(Continued from Page 46)

After my visit at the studio I was accompanied back to Berlin by Mr. Heymann who then offered to get me theatre tickets, take me around the city or do anything he could to make my stay there pleasant. I certainly appreciate and thank him for his consideration and hope I may return his kindness some time in Hollywood.

Enroute to Paris we stopped over at Cologne to see their beautiful Gothic cathedral and attend an International exposition of interior decoration.

While in Paris I had an interesting visit with George Benoit, who is with Pathe-Natan Company. George looks very well and of course is happy in his native country. Ten days is a very short time to spend in Paris but with the help of a friend of mine, Buckley MacGurrin, an American artist, who has resided there a number of years, I believe we got the most possible out of our short stay.

Arriving in England seemed almost like coming home. To be able to understand the language was such a relief after struggling along trying to understand and make oneself understood with little or no knowledge of the language of the country one is in. Visiting relatives took me over a good bit of England, Liverpool, Chester, Stratford-on-Avon, Rugby, Guilford, Oxford and London. Went out to the studio at Elstree, also to the Associated Radio Pictures plant. I met a number of men in London in the picture business who were formerly in Hollywood. In England now the aim seems to be to make a picture which will not only have good box-office value in England but in America as well. Not to turn out an inexpensive picture just to comply with the quota law. Therefore in the future there will probably be more time spent on their pictures than there has been in the past in the most cases.

I arrived back in Hollywood just eight months after leaving, having traveled 36,000 miles and circled the globe. A great experience from which I shall derive a great deal of pleasure the rest of my life.

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Art

(Continued from Page 25)

cinematography. The photography of American pictures, for instance, is vastly different from that of German films, or Russian films, or British or French films. This is a most encouraging sign, for if at any time the cinematographers of any country should find themselves artistically stagnating they would be bound to find encouragement and a fresh stimulus in the distinctive efforts of their foreign fellow-workers.

But such a condition of artistic stagnation seems very unlikely. Cinematography—throughout the world—seems possessed of an indomitable artistic spirit. This has recently been demonstrated by its amazing recovery from the setbacks that occurred with the advent of sound. At the moment, cinematography had reached its highest artistic development; then, almost overnight, the restrictions of sound set it back, so it seemed, ten years or more. But instead of being disheartened, cinematographers refused to admit the setback, and have, despite all obstacles, so completely recovered that the cinematographic treatment given ordinary program pictures today is vastly superior to that given the greatest special productions of the pre-sound era. With such a spirit behind it, the future of cinematography is assuredly safe.

Have You Ordered
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Vol. 2?

Los Angeles Amateur Cine Club

ROBERT B. Brown, of Long Beach, won first prize and I. O. Levy, of Los Angeles, won second prize in the monthly uncut film contest of the Los Angeles Amateur Cine Club at the March meeting of the club. The meeting was held at the Bell & Howell Company building, Hollywood.

An unusually fine program was furnished and two special 16 mm. films were shown that were outstanding. These were, "The Life of a Bee" and a film prepared by the technical staff of the University of Southern California. The first named picture employed lavish use of telephoto and microscopic shots. The U.S.C. picture, prepared under the supervision of Dr. Losher, who gave an explanatory talk during the showing, was also replete with excellent telephoto and microscopic shots and was a splendid example of this type of work. Joseph Dubray, A.S.C., head of the Hollywood branch of the Bell & Howell Company, gave an instructive and interesting talk on telephoto lenses. The April meeting will be held on one of the sound stages at the studios of the Fox Film Corporation. It was announced that many Fox stars will be present and a crew of studio electricians will be on hand to furnish lights while the club members make pictures of the screen celebrities. The National Theatre Supply Corporation will be the hosts, arrangements for the meeting being made by Mr. Ralke of that organization.

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Portland Cine Club

AN UNUSUALLY interesting 16 mm. picture was shown to the members of the Portland, Oregon, Cine Club at its March meeting, held at the Benson Hotel. The picture, made by Dr. Segris, a member of the club, is an educational subject called, "Your Teeth and Health." Dr. Segris has worked several years in the making of the picture which has just been completed.

◆

New Home For Educational Project-O

EDUCATIONAL Project-O Film Company, formerly quartered in the American Bank Building, Los Angeles, moved last month to new offices in the Fairfax Theatre Building, 317 North Fairfax Street, Hollywood. Many friends attended the opening of the new quarters on Tuesday evening, March 15. Phil Meisenzahl is manager.

◆

Free Monograph Tells How Talkies Helped Boost Piston Ring Sales 23 Percent

AN INCREASE of 23 percent in 1931 business over that of 1930 is reported by the Perfect Circle Company, of Hagerstown, Ind., makers of automobile piston rings. "There is no doubt but what our motion picture advertising has done a great deal toward making this sales record possible," says George W. Stout, advertising manager of the company.

The Perfect Circle Company employs a talking motion picture called "The Magic Circle," presented by portable talkie reproducer machines, and much interest has developed with regard to the methods used in making the picture, arranging the talkie showings, and in rolling up definite sales as a result of these showings.

A monograph entitled "The Perfect Circle Plan, a Practical Application of Talking Motion Pictures to a Selling Problem" has been prepared and will be sent free on request to business executives who wish to inform themselves as to how the Perfect Circle Company carries out its picture program. The monograph should be of value to any company contemplating the use of talking pictures in its sales or sales promotion work. It can be obtained by writing Industrial Division, Bell & Howell Company, 1801 Larchmont Ave., Chicago, and simply asking for "The Perfect Circle Plan."

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Florida Opening Drive to Bring Production to State

FLORIDA may produce a "statewide" motion picture as a means of pointing out to producers the advantage of using Florida as a site for production. The plan has been advocated by the committee on the development of the motion picture industry, of which Trenton C. Collins, Tampa, is chairman.

He is calling on all sections to aid wtih an "aggressive campaign" the drive to bring film production to the state of Florida. One move proposed calls for the donation of property to be used as studio sites.

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Hi-Power Optical System Doubles Illumination of Victor 16 MM. Cine' Projectors

THE VICTOR Animatograph Corporation, Davenport, Iowa, announces that, after several months of research and experimentation, it has developed a new Optical System of exceptional efficiency which sets an entirely new standard for brilliancy in 16 mm. projection. It is claimed that this new Hi-Power System gives twice the illumination of the regular Victor Optical System when the same projection lamps are used.

The constantly growing popularity of 16 mm. films and projectors among educational, religious, and industrial users of motion pictures has resulted in demands for more and more light to meet the needs for large, brilliant images and for projection throws of one hundred feet or more.

Remarkable progress has been made by the lamp manufacturers in developing high intensity lamps of unusual power. It is evident, however, that the size and heat limitations imposed on the lamp manufacturers by the size and design of 16 mm. projectors has so restricted them that there is no great possibility of their being able to add appreciably to present lamp efficiencies.

The new Victor Hi-Power Optical System is, therefore, an extremely important step forward, in that it literally doubles the power of all present 16 mm. projection lamps. It accomplishes this by gathering and transmitting to the screen twice as much of the light from the lamp as is transmitted by the regular Victor Optical System. It is said that the consequent increase in illumination will more than satisfy present and prospective users of 16 mm. projectors who have been demanding greater illumination to meet daylight projection and auditorium requirements.

The Victor Animatograph Corporation had already been successful in mastering projection throws of more than one hundred feet with its regular Optical System when using 375 watt-75 volt or 165 watt-30 volt lamps. With the Hi-Power Optical System capable of doubling the amount of light utilized from these lamps, it is evident that the illumination it makes possible is sufficient to meet every reasonable demand of non-theatrical users.

The new Victor Hi-Power Optical System consists of a Super Reflector adjustably mounted in a special lamp house extension, a set of precision-ground Bull's Eye Condensers and a more powerful projection lens. These parts may be easily installed in a few moments by any Victor owner and are available at a very reasonable cost.

The Hi-Power Optical System will not replace the regular Victor Optical System in all models, due to the fact that it provides greater illumination than is required for home use or where large pictures and long projection throws are not required. Therefore, the Hi-Power System will be provided in new Victor equipments only on order and at a slight extra cost.

◆

Typewriter For Composition of Film is Invented

EMMANUEL Rubenstein, Hollywood composer and scenarist, and his brother Enoch, of Syracuse, N. Y., have patented a "musical typewriter," to speed production of theme songs and musical accompaniments for pictures. The device will be manufactured in Rochester, N. Y., if negotiations with a firm there are concluded. Production is expected to get under way in the near future.

The typewriter has 53 keys, bearing all necessary symbols, and is equipped with a special ratchet enabling the composer to write either up or down the scale without using the line shifts. The inventors claim speed, better "copy" and better music, as the resulting advantages of the use of their machine.

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BRULATOUR BULLETIN

What's What EASTMAN FILMS *Who's Who*

AL GILKS JOINS GROWING RANKS OF GLOBE-TROTTING CAMERAMEN

AL GILKS, newest recruit of the globe-trotting cameramen, has returned to Hollywood after covering more than 40,000 miles with Cornelius Vanderbilt on the Commodore's 265-foot yacht Alva. Although but a year old, all around the old world which it circled the craft is known for its striking symmetry and its ability to help the skipper outguess the whims of old nature in unsmiling mood.

So it was entirely in accord with the fitness of things that in the Alva's spacious storage quarters there were many thousand feet of Eastman Super Pan all set faithfully to record a never ending change of scene and also likewise to help its cameraman outguess the whims of that same old nature.

The privileged few who have seen some of Al's photography readily appreciate his enthusiasm over the entire trip. He exposed many thousand feet of that same Eastman Super Pan on subjects of wide and varied interest. Just at present he is dickering with a major studio on a feature production.

What the Cameramen Are Doing to Hold Hollywood on Map

Charlie Glouner

Busy head of the camera department at Universal, is all hopped up over a bumper crop of peach blossoms at his big ranch. Charles is a determined guy, and is spending all of his spare time at the ranch, and frankly admits that he is guarding the blossoms against the possible attack of supervisors.

Virgil Miller

Big boss of the camera outfit at Paramount, is hobbling around with a bum knee and can't even play golf— Ask him the reason and all you'll get is "Horse Feathers!"

Bob Kurrle

Is turning in some swell stuff on "Jewel Robbery" at Warner Brothers-First National, after having turned in a creditable job with "Winner Take All." Al Green is still Bob's second, while Johnny Shepek holds down the job as assistant.

Venturini Off for Japan

Dan Venturini, Paramount director, sailed last week for Japan, carrying with him a supply of Eastman Super Pan upon which will be photographed backgrounds and atmosphere shots for the forthcoming Paramount production, "Madame Butterfly."

Gregg Toland

Who made an over-night success at United Artists, has just finished three in a row at Warner-First National, "Play Girl," "Man Wanted," and "Tenderfoot." Scheduled to return to United Artists for resumption of his success there. Bert Shipman, his second, and Perry Finnerman, assistant.

Fred Jackman

Has returned from Memphis, Tennessee, where he supervised the photography of some very unusual background shots for the forthcoming Dick Barthelmess picture at the Burbank studio.

George Barnes

Has been loaned to the Fox Studios, where he is photographing "Society Girl," being directed by Sid Lanfield.

Jimmy Howe

Who clicked in a big way and shot his salary over the scale with "Transatlantic," and then followed with "Surrender," is now photographing "Man About Town," which is Director Jack Dillon's first picture on his new termer at Fox Hills.

Mike McGreal

Johnny Arnold's snappy assistant at M-G-M, is drawing a lot of scowl from the still men on the lot. The reason— Mike has gone slightly nerts with a Graflex, and now he knows all about overexposure 'n everything. So far he hasn't hit any static.

Will Cline

Is splitting his time between Universal where he is doing the athletic series, and Standard, where he is photographing Ben Holmes' famous classics.

Ten Years a Long Time— in the Picture Biz

Ten years is a pretty sweet record for any man to hold with any organization. Art Lloyd, cameraman at the Roach Studios, has just rounded out his tenth year, and isn't even looking for a job any place else.

Sol Polito

Whose "Five Star Final," "Union Depot" and other Warner-First National Productions have made him a photographic institution on that lot, is now doing a very interesting picture with Director Al Green under the title of "The Dark Horse." Title notwithstanding, there is not a saddle, a pair of chaps, a lasso, nor even a bale of hay in the entire list of props. Sol is carrying about with him a rabbit's foot and a secret yen that Bill Koenig will find some excuse to send him to New York. Funny guy, Polito.

Lee Garmes

Whose "Shanghai Express" and other Von Sternberg pictures skyrocketted Lee to the top of the ladder, is currently supervising the photoplay of "Strange Interlude," with Norma Shearer at M-G-M; after which he will move his outfit to the Fox Hills Studios, where he starts a long term contract.

Jackson Rose

Is back at Universal where he made such splendid impressions with his photography of "Seed" and "Reckless Living." He is now doing "Radio Patrol," with Dick Fryer as his second, and Walter Williams and Ted Hayes as assistants.

Charles Lang

At Paramount has just finished "Thunder Below," following his success on "No One Man." His seconds are Bob Pittack and Guy Bennett, his assistants Tommy Morris and Cliff Shirpser.

Ernie Miller

Chief Photographer for Fanchon Royer Productions, is spending his brief time between pictures on his ranch.

Dave Abel

Has a nice trio to his credit at Paramount with "Rich Man's Folly," "Ladies of the Big House," and the recently completed "The Miracle Man." His second is Ernie Lazlo, and Jimmy King is his assistant.

Charlie Marshall

"The Flying Fotographer" who made such a swell job of the air sequences of "Hell Divers" at M-G-M, is giving Paramount the benefit of his artistry and experience on "Sky Bride."